SAF-RC-189 100N Field Remediation -**Soil Full Protocol** FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0807 SAF-RC-189

Sample Location: 100-N-84:2

Date:

20 June 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100N Field Remediation - Soil Full Protocol - Waste Subsite 100-N-84:2

Subject:

Inorganics - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	С	
J1TPV2	5/21/14	Soil	C	See note 1
J1TPW4	5/21/14	Soil		See note 1
J1TPX5	5/21/14		C	See note 1
J1TPX6	5/21/14	Soil	<u>C</u>	See note 1
J1TPX7		Soil	C	See note 1
J1TPX8	5/21/14	Soil	C	See note 1
	5/21/14	Soil	C	See note 1
J1TPX9	5/21/14	Soil	C	See note 1
J1TR01	5/21/14	Soil	С	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	
J1TR07	5/21/14	Soil	c	See note 1
ICP metals (601	~~.	34.		See note 1

1 - ICP metals (6010B) and mercury by 7471A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

Holding Times

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

Preparation (Method) Blanks

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "UJ". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J1TPW4) was submitted for analysis. Twelve analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

Accuracy

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all arsenic (50%), barium (37%), beryllium (48%), boron (50%), cadmium (58%), chromium (30%), cobalt (41%), lead (46%), molybdenum (51%), nickel (37%), potassium (41%), selenium (52%), silver (59%) and sodium (51%) results were qualified as estimates and flagged "J".

Due to matrix spike recoveries outside QC limits, all undetected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as rejected and flagged "UR".

Due to matrix spike recoveries outside QC limits, all detected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (13%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable

Precision

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

Due to RPDs outside QC limits, all aluminum (50%), barium (54%), calcium (49%), chromium (46%), copper (46%), iron (49%), magnesium (47%), manganese (50%), silicon (54%), sodium (50%), vanadium (51%) and zinc (46%) results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPD for barium (39.5%) and sodium (37.8%) was outside QC limits. Under WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

Completeness

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 96%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike recoveries outside QC limits, all arsenic (50%), barium (37%), beryllium (48%), boron (50%), cadmium (58%), chromium (30%), cobalt (41%), lead (46%), molybdenum (51%), nickel (37%), potassium (41%), selenium (52%), silver (59%) and sodium (51%) results were qualified as estimates and flagged "J".
- Due to matrix spike recoveries outside QC limits, all undetected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as rejected and flagged "UR".
- Due to matrix spike recoveries outside QC limits, all detected antimony (28%), calcium (-9%), copper (24%), magnesium (2%), silicon (-0.5%), vanadium (-0.3%) and zinc (12%) results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits, all silicon (13%) results were qualified as estimates and flagged "J".
- Due to RPDs outside QC limits, all aluminum (50%), barium (54%), calcium (49%), chromium (46%), copper (46%), iron (49%), magnesium (47%), manganese (50%), silicon (54%), sodium (50%), vanadium (51%) and zinc (46%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.
- BJ Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The
 data may not be valid for some specific applications (i.e., usable for
 decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

REVIEWER: ELR	Project: 100-N-84:2	PAGE_1_OF_1
QUALIFIER	SAMPLES AFFECTED	REASON
J	All	LCS recovery
. J	All	MS recovery
J	J1TPV1	MS recovery
UR	J1TPV2, J1TPW4 J1TPX5, J1TPX6 J1TPX7, J1TPX8 J1TPX9, J1TR01 J1TR02, J1TR04 J1TR07	MS recovery
J	All	MS recovery
J	All	RPD
	QUALIFIER J J UR	SAMPLES AFFECTED J Ali Ali

METALS DATA QUALIFICATION SUMMARY*

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV1

Lab Sample ID:

280-55789-1

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 0749

Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B 1.0

Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID: Lab File ID:

MT_026 26A052814A.asc

Dilution:

Analysis Date: Prep Date:

05/28/2014 1309 05/27/2014 1230 Mulsolu

Initial Weight/Volume: Final Weight/Volume: 1.06 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	OI.
Aluminum		7980	XM3	1.5	RL
Antimony		0.40	вIJ	0.37	4.9
Arsenic		3.3	N J		0.58
Barium		62.0	TMXN	0.64	0.97
Beryllium		0.032	CNU	0.074	0.49
Boron		0.96		0.032	0.19
Cadmium		0.13	BNJ	0.95	1.9
Calcium			ВИМЗ	0.040	0.19
Chromium		7990	NXMI	13.7	48.5
Cobalt		11.6	NXMI	0.056	0.19
Copper		10.4	E MXN	0.097	0.97
Iron		1 6.1	NXMJ	0.21	0.97
Lead		24800	XM J	3.7	4.9
Magnesium		5.5	LMN	0.26	0.49
•		6140	N X M	3.6	19.4
Manganese		379	XMT	0.097	0.97
Molybdenum		0.25	ENU	0.25	1.9
Nickel		14.9	NXM T	0.12	3.9
Potassium		1290	NM I	39.8	291
Selenium		0.83	UNJ	0.83	
Silicon		274	NM J	5.5	0.97
Silver		0.16	T NU	0.16	9.7
Sodium		280	É MN		0.19
Vanadium		61.9	Z WN	57.2	116
Zinc		47.5		0.091	1.9
		47.0	NXM J	0.39	0.97

7471A	Mercury	(CVAA)	
17117	mor cury	(CAWA)	

280-227591

280-227408

Analysis Method: Prep Method:

7471A 7471A

Dilution: Analysis Date: 1.0

05/27/2014 1820

Prep Date:

05/27/2014 1300

Analysis Batch:

Prep Batch:

Instrument ID: Lab File ID:

MT_033 N/A 0.67 g

Initial Weight/Volume: Final Weight/Volume:

50 mL

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0087

Qualifier

MDL 0.0051

RL 0.016

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV2

Lab Sample ID:

280-55789-2

05/28/2014 1319

05/27/2014 1230

Client Matrix:

Solid

% Moisture: 1.2 Date Sampled: 05/21/2014 0744

Date Received: 05/23/2014 0945

6010B	Metals	(ICP)
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Analysis Method: Prep Method: Dilution:

Analysis Date:

Prep Date:

6010B 3050B 1.0

Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID: Lab File ID:

MT_026 26A052814A.asc

Vulula

Initial Weight/Volume: 1.08 g Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7470	x 🏂	1.5	
Antimony		0.36	ÛŔ		4.7
Arsenic		3.1	ँठे	0.36	0.56
Barium		64.2		0.62	0.94
Beryllium		0.031	× 1	0.071	0.47
Boron		1.6	υ \	0.031	0.19
Cadmium			В	0.92	1.9
Calcium		0.18	BN	0.038	0.19
Chromium		5790	X	13.2	46.9
Cobalt		15.8	×	0.054	0.19
		8.4	X	0.094	0.94
Copper		16.0	х	0.20	0.94
Iron		20800	x	3.6	4.7
_ead		8.1	ļ	0.25	0.47
Magnesium		4310	X	3.5	18.7
Manganese		322	x	0.094	0.94
Molybdenum		0.28	В	0.24	1.9
Nickel		12.6	x	0.12	3.7
Potassium		1460		38.4	
Selenium		0.81	υl		281
Silicon		224	•	0.81	0.94
Silver		0.15	U	5.3	9.4
Sodium		292	٠	0.15	0.19
/anadium		45.5	ıl.	55.3	112
Zinc			V	0.088	1.9
		46.5	X P	0.27	0.04

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

1.0

Analysis Date: Prep Date:

Dilution:

05/27/2014 1827 05/27/2014 1300 Analysis Batch: 280-227591 Prep Batch:

46.5

280-227408

Instrument ID: Lab File ID: Initial Weight/Volume:

0.37

MT_033 N/A 0.58 g 50 mL

0.94

Final Weight/Volume:

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0094

Qualifier В

MDL 0.0058

RL 0.018

TestAmerica Denver

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Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPW4

Lab Sample ID:

280-55789-3

Client Matrix:

Solid

% Moisture: 0.1

W4/20/14

Date Sampled: 05/21/2014 0713 Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: Prep Method: Dilution:

Analysis Date:

Prep Date:

6010B 3050B

1.0

05/28/2014 1322

05/27/2014 1230

Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID: Lab File ID:

MT_026 26A052814A.asc

Initial Weight/Volume: Final Weight/Volume:

1.10 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		98.4	×J	1.4	
Antimony		0.35	ΩŘ	0.35	4.5
Arsenic		0.60	U A		0.55
Barium		1.2	× 1	0.60	0.91
Beryllium		0.030		0.069	0.45
Boron		0.89	U	0.030	0.18
Cadmium			U	0.89	1.8
Calcium		0.037	UN	0.037	0.18
Chromium		21.7	вх	12.8	45.5
Cobalt		0.14	BX	0.053	0.18
Copper		0.091	UX	0.091	0.91
ron		0.5 9	ВХ	0.20	0.91
		159	Х	3. 5	4.5
.ead		0.40	В	0.25	0.45
Magnesium		11.8	вх	3.4	18.2
/langanese		2.9	× \	0.091	0.91
/lolybdenum		0.24	υ	0.24	1.8
lickel		0.11	UХ	0.11	3.6
otassium		37.3	U	37.3	273
Selenium		0.78	Ü	0.78	
Silicon		87.6	٠	5.1	0.91
ilver		0.15	U		9.1
odium		53.7	Ü	0.15	0.18
/anadium		0.26		53.7	109
Zinc .			В	0.086	1.8
•		0.62	вх 🏋	0.36	0.91

7471A Morcury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

Dilution:

Analysis Date: Prep Date:

1.0

05/27/2014 1300

05/27/2014 1829

Analysis Batch: Prep Batch:

280-227591 280-227408

Instrument iD: Lab File ID: Initial Weight/Volume:

MT_033 N/A 0.64 g

Final Weight/Volume: 50 mL

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0052

Qualifier

MDL 0.0052

RL 0.016

TestAmerica Denver

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Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX8

Lab Sample ID:

280-55789-4

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 1051

Date Received: 05/23/2014 0945

6010B Metals (ICP)

1/4/2014

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

6010B 3050B 1.0

05/28/2014 1325

05/27/2014 1230

Analysis Batch: Prep Batch:

280-227791 280-227290

Instrument ID:

Lab File ID:

MT_026 26A052814A.asc

Initial Weight/Volume: Final Weight/Volume:

1.04 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3430	×J	1.5	
Antimony		0.38	ÛZ		4.9
Arsenic		1.8	~ ' '7	0.38	0.59
Barium		26.6	, -	0.65	0.99
Beryllium			X {	0.075	0.49
Boron		0.033	U	0.033	0.20
Cadmium		0.97	U	0.97	2.0
Calcium		0.050	BN	0.041	0.20
Chromium		4200	X \	14.0	49.5
Cobalt		4.0	X \	0.057	0.20
		4.7	x \	0.099	0.99
Copper		8.2	x	0.21	0.99
ron		10 800	×	3.8	4.9
_ead		3.0	l l	0.27	0.49
Magnesium		2410	×	3.7	19.8
Manganese		160	X	0.099	0.99
Molybdenum		0.26	Û	0.26	
Nickel		6.0	x ·	0.12	2.0
otassium		576	^		4.0
Selenium		0.85	1	40.6	297
Silicon		112	U	0.85	0.99
ilver		-		5.6	9.9
Sodium		0.16	U	0.16	0.20
/anadium		218	i	58.4	119
linc		24.4	, di	0.093	2.0
		21.9	x V	0.39	0.99

7	471A	Mercury	(CVAA)

Analysis Method: Prep Method:

7471A 7471A

Dilution:

1.0

Analysis Date: Prep Date:

05/27/2014 1836 05/27/2014 1300 Analysis Batch: Prep Batch:

280-227591 280-227408

Instrument ID: Lab File ID:

MT_033 N/A 0.60 g

Initial Weight/Volume: Final Weight/Volume:

50 mL

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0093

Qualifier В

MDL 0.0057 RL 0.017

TestAmerica Denver

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Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX6

Lab Sample ID:

280-55789-5

05/28/2014 1327

05/27/2014 1230

Client Matrix:

Solid

6010B

3050B

1.0

% Moisture:

1.1

Date Sampled: 05/21/2014 1058 Date Received: 05/23/2014 0945

6010B	Metals	//CD\
00 I Q D	MOLEUR	11671

V 6/20/4

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

Analysis Batch: Prep Batch:

280-227791 280-227290

Instrument ID: Lab File ID:

MT_026 26A052814A.asc

Initial Weight/Volume:

1.00 g Final Weight/Volume:

100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Numinum		4600	×ゴ	1.6	5.1
Antimony		0.38	UR	0.38	0.61
Arsenic	·	1.8	ኔ	0.67	1.0
3arium		56.6	x 1	0.077	0.51
Beryllium		0.033	U	0.033	0.20
Boron		0.99	Ü	0.99	2.0
Cadmium		0.052	ВИ	0.041	
Calcium		5400	×	14.3	0.20
Chromium		3.3	x	0.059	50.6
Cobalt		10.3	x	0.10	0.20
Copper		14.4	x l	0.10	1.0
ron		25000	â l		1.0
ead		3.7	^	3.8	5.1
fagnesium		4270	x l	0.27	0.51
langanese		299		3.7	20.2
folybdenum		0.28	×	0.10	1.0
ickel		6.6	Ü	0.26	2.0
otassium		62 6	X	0.12	4.0
elenium			1	41.5	303
ilicon		0.87	U	0.87	1.0
ilver		149	1	5.7	10.1
odium		0.16	U	0.16	0.20
anadium		349		59.7	121
inc		63.8	d.	0.095	2.0
III-C		42.6	×Ψ	0.40	1.0

7471A Mercury (CVAA)

Analysis Method:

7471A

Prep Method: 7471A Dilution:

Analysis Date: Prep Date:

05/27/2014 1838

1.0

05/27/2014 1300

Analysis Batch: 280-227591 Prep Batch: 280-227408

Instrument ID: Lab File ID:

MT_033 N/A 0.54 g

Initial Weight/Volume: Final Weight/Volume:

50 mL

Analyte Mercury DryWt Corrected: Y

Result (mg/Kg) 0.0062

Qualifier Ū

MDL RL 0.0062 0.019

TestAmerica Denver

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Job Number: 280-55789-1 Sdg Number: JP0807

Client Sample ID:

J1TPX7

Lab Sample ID:

280-55789-6

Client Matrix:

Solid

05/28/2014 1340

05/27/2014 1230

% Moisture:

Date Sampled: 05/21/2014 1115 Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method:

Analysis Date:

Prep Date:

Prep Method: Dilution:

6010B 3050B 1.0

Analysis Batch: Prep Batch:

280-227791 280-227290

1.6

Instrument ID: Lab File ID:

MT_028

100 mL

Initial Weight/Volume: Final Weight/Volume: 26A052814A.asc 1.15 g

V 6/20/4

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Vuminum		6090	× 5	1.4	4.4
Intimony		0.34	υRŠ	0.34	0.53
Arsenic		2.7	T	0.58	0.88
Barium		49.7	× J	0.067	0.44
Beryllium		0.029	Ü	0.029	0.18
Boron		0.87	u l	0.87	
Cadmium		0.11	BN	0.036	1.8
Calcium		5950	×		0.18
Chromium		7.1	â	12.5	44.2
Cobalt		9.3	â l	0.051	0.18
Copper		14.4	â	0.088	0.88
ron		22400		0.19	0.88
.ead		4.6	×	3.4	4.4
/agnesium				0.24	0.44
Manganese		4570	X	3.3	17.7
Molybdenum		307	X	0.088	0.88
lickel		0.23	U	0.23	1.8
otassium		9.9	X	0.11	3.5
elenium		955		36.2	265
ilicon		0.76	U	0.78	0.88
		171	1	5.0	8.8
ilver		0.14	U	0.14	0.18
odium		300	1	52.1	106
anadium		53.7		0.083	1.8
linc		47.6	x 🖤	0.35	0.88

7471A Mercury (CVAA)

280-227591

280-227408

Analysis Method: Prep Method:

7471A 7471A

Dilution: Analysis Date:

1.0

Prep Date:

Anaiyte

Mercury

05/27/2014 1841

05/27/2014 1300

DryWt Corrected: Y

Result (mg/Kg) 0.019

Analysis Batch:

Prep Batch:

Qualifier

MDL 0.0053

Initial Weight/Volume:

Final Weight/Volume:

Instrument ID:

Lab File ID:

RL 0.016

MT_033

0.64 g

50 mL

N/A

TestAmerica Denver

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Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX8

Lab Sample ID:

280-55789-7

Client Matrix:

05/27/2014 1230

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 1120

Date Received: 05/23/2014 0945

6010B Metals (ICP)

V Welzoly

Analysis Method: Prep Method:

6010B

Analysis Batch:

280-227791 280-227290

Instrument ID: Lab File ID:

MT_026

Dilution: Analysis Date:

Prep Date:

3050B 1.0 05/28/2014 1342 Prep Batch:

Initial Weight/Volume:

26A052814A.asc 1.06 g

Final Weight/Volume:

100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Vuminum		4850	ĽX	1.5	4.8
Antimony		0.36	×¥.	0.38	0.57
Arsenic		2.1	J	0.63	0.96
3arium		87.5	X	0.073	0.48
Beryllium		0.032	υ \	0.032	0.19
Boron		0.94	ŭ \	0.94	1.9
Cadmium		0.047	BN	0.039	
Calcium		5880	×	13.5	0.19
Chromium		4.7	x \		47.9
Cobalt		10.6	x \	0.056	0.19
Copper		14.7	â \	0.096	0.96
ron		26500	â	0.21	0.96
.ead		3.8	^	3.6	4.8
/agnesium		4690	1	0.26	0.48
/langanese		429	X	3.5	19.2
folybdenum			X	0.096	0.96
lickel		0.25	U	0.25	1.9
otassium		7.6	X	0.12	3.8
elenium		715	i	39.3	287
ilicon		0.82	U	0.82	0.96
ilver		219	- 1	5.4	9.6
odium		0.15	U	0.15	0.19
anadium		361	- 1	56.5	115
		64.5	(6	0.090	1.9
inc		44.0	X Y	0.38	0.96

7471A	Mercury	(CVAA)

Analysis Method: Prep Method:

7471A 7471A

1.0

Analysis Batch: Prep Batch:

280-227591 280-227408

Instrument ID: Lab File ID: Initial Weight/Volume: MT_033 N/A 0.56 g

50 mL

Analysis Date: Prep Date:

Dilution:

05/27/2014 1843 05/27/2014 1300

Analyte

Mercury

DryWt Corrected: Y

Result (mg/Kg) 0.0063

Qualifier В

MDL 0.0060

Final Weight/Volume:

RL

0.018

TestAmerica Denver

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX9

Lab Sample ID:

280-55789-8

Client Matrix:

Solid

% Moisture:

3.4

Date Sampled: 05/21/2014 0848 Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B Analysis Batch:

280-227791

Instrument ID: Lab File ID:

MT_026

100 mL

Dilution:

1.0

Prep Batch: 280-227290

Initial Weight/Volume: Final Weight/Volume:

26A052814A.asc 1.09 g

Analysis Date: Prep Date:

05/28/2014 1345

05/27/2014 1230

Vulzoly

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL.
Aluminum		8630	x 3	1.5	4.7
Antimony		0.36	υR	0.36	0.57
Arsenic		3.5	J	0.63	0.95
Barium		66.6	×Ϊ	0.072	0.47
Beryllium		0.031	U	0.031	0.19
Boron		1.2	В	0.93	
admium		0.13	ВИ	0.039	1.9
Calcium		9300	×	13.4	0.19
Chromium		10.7	x \		47.5
obalt		9.3	â l	0.055	0.19
Copper		18.1	â l	0.095	0.95
on		22400	â l	0.21	0.95
ead		6.1	^	3.6	4.7
lagnesium		5250		0.2 6	0.47
langanese			X	3.5	19.0
lolybdenum		342	X	0.095	0.95
ickel		0.25	U	0.25	1.9
otassium		12.4	X	0.12	3.8
elenium		1520		38.9	285
ilicon		0.82	U	0.82	0.95
		277	1	5.4	9.5
ilver		0.15	U	0.15	0.19
odium		408		56.0	114
anadium		50.2	1.	0.089	1.9
inc		61.3	× Y	0.38	0.95

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A

Analysis Batch: Prep Batch:

280-227591 280-227408

Instrument ID: Lab File ID: Initial Weight/Volume: MT_033 N/A

Dilution: Analysis Date:

1.0

05/27/2014 1845

Prep Date:

05/27/2014 1300

Result (mg/Kg)

Qualifier В

Final Weight/Volume:

0.58 g 50 mL

Analyte Mercury

DryWt Corrected: Y

0.011

MDL 0.0059 RL

0.018

TestAmerica Denver

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Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR01

Lab Sample ID:

280-55789-9

Client Matrix:

Solid

% Moisture:

1.7

Date Sampled: 05/21/2014 0818 Date Received: 05/23/2014 0945

6010B Metala (ICP)

Analysis Method: Prep Method:

6010B 3050B

Analysis Batch: Prep Batch:

280-227791 280-227290

Instrument ID: Lab File ID:

MT 026 26A052814A.asc

Dilution: Analysis Date: 1.0

V alvolue

Initial Weight/Volume: Final Weight/Volume:

1.06 g 100 mL

05/28/2014 1348 Prep Date: 05/27/2014 1230

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4650	x 1	1.5	4.8
Arsenic		1.9	~ 1	0.63	
Barium		41.7	×	0.03	0.96
Boron		0.94	û l		0.48
Cadmium		0.067	1	0.94	1.9
Calcium		6630	BN	0.039	0.19
Chromium			X	13.5	48.0
Iron		4.0	Х	0.056	0.19
Magnesium		28000	Х	3.6	4.8
Manganese		4840	X	3.6	19.2
Molybdenum		318	X	0.096	0.96
•		0.25	U	0.25	1.9
Nickel		8.5	X	0.12	3.8
Potassium		614	į.	3 9.3	288
Selenium		0.83	U	0.83	0.96
Silver		0.15	U	0.15	0.19
Sodium		314		56.6	115
Zinc		48.6	× 🔻	0.38	0.96

Analysis Method: Prep Method:

Analysis Date:

Dilution:

Prep Date:

6010B 3050B

5.0 05/30/2014 1803

05/27/2014 1230

Analysis Batch: Prep Batch:

280-228120 280-227290 Instrument ID: Lab File ID:

MT 026 26a053014a.asc

Initial Weight/Volume: Final Weight/Volume:

1.06 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	D)
Antimony Beryllium Cobalt Copper Lead Silicon Vanadium	`	1.8 0.16 11.2 18.0 5.4 185 81.2	U A V A X	1.8 0.16 0.48 1.0 1.3 27.2	RL 2.9 0.96 4.8 4.8 2.4 48.0
		01.2	V	0.45	9.6

7471A Mercury (CVAA)

Analysis Method: Prep Method: Dilution:

7471A 7471A 1.0

Analysis Batch: Prep Batch:

280-227591 280-227408

Instrument ID: Lab File ID: Initial Weight/Volume: MT_033 N/A 0.66 g

Final Weight/Volume:

MDL

0.0051

50 mL

Analysis Date: Prep Date:

Analyte

Mercury

05/27/2014 1848 05/27/2014 1300

DryWt Corrected: Y

Result (mg/Kg) 0.0061

Qualifier

RL

0.016

TestAmerica Denver

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Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR02

Lab Sample ID:

280-55789-10

Client Matrix:

200-00100

Solid

% Moisture:

V 12/20/4

1.5

Date Sampled: 05/21/2014 0857

Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method:
Prep Method:
Dilution:

Analysis Date:

Prep Date:

6010B 3050B

1.0

05/28/2014 1350 05/27/2014 1230 Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID: Lab File ID: MT_026

Initial Weight/Volume:

26A052814A.asc 1.00 g

Final Weight/Volume:

1.00 g 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Vluminum		4110	x f	1.6	5.1
Antimony		0.39	ÛB	0.39	0.61
√rsenic		2.0	*. T	0.67	
Barium Barium		35.2	χĬ	0.077	1.0
3eryllium		0.033	û		0.51
Boron		0.99	ŭ	0.033	0.20
Cadmium		0.042	1	0.99	2.0
Calcium		4850	UN	0.042	0.20
Chromium			X	14.3	50.7
Cobalt		4.9	X	0.059	0.20
Copper		6.9	X	0.10	1.0
ron Sopper		10.4	Х	0.22	1.0
.ead		165 00	X	3.9	5.1
		3,4	I	0.27	0.51
fagnesium		3320	Х	3.8	20.3
/anganese		2 22	X	0.10	1.0
folybdenum	•	0.26	U	0.26	2.0
lickel		7.0	X I	0.12	4.1
otassium		6 87		41.6	304
ielenium		0.87	U	0.87	1.0
ilicon		150		5.7	10. 1
iilver		0.16	U	0.16	0.20
Godium		201	_	59.9	
anadium/		40.7		0.095	122
inc		31.7	×Ψ		2.0
		J	^ 7	0.40	1.0

7471A Mercury (CVAA)

Analysis Method: Prep Method: 7471A 7471A

1.0

05/27/2014 1850 05/27/2014 1300 Analysis Batch: Prep Batch:

ch: 280-227591 280-227408

Instrument ID: Lab File ID: MT_033 N/A

Initial Weight/Volume: Final Weight/Volume:

0.68 g 50 mL

Prep Date:
Analyte

Analysis Date:

Dilution:

Mercury

05/2//2014 1500

DryWt Corrected: Y

Result (mg/Kg) 0.0078

Qualifier B MDL 0.0050

RL 0.015

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR04

Lab Sample ID:

280-55789-11

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 0803 Date Received: 05/23/2014 0945

6010B Metais (ICP)

Analysis Method: Prep Method:

6010B 3050B Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID: Lab File ID:

MT_028 26A052814A.asc

Dilution:

1.0

Initial Weight/Volume: Final Weight/Volume:

1.12 g 100 mL

Analysis Date: Prep Date:

05/28/2014 1353 05/27/2014 1230

4/20/4

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		9 050	×1	1.4	4.5
Antimony		0.34	u 🕰	0.34	0.54
Arsenic		3.2	Ť	0.60	0.91
Barium		75.1	× J	0.069	0.45
Beryllium		0.046	в	0.030	0.18
Boron		1.5	в	0.89	1.8
Cadmium		0.099	BN	0.037	0.18
Calcium		4790	x	12.8	45.4
Chromium		12.1	x l	0.053	0.18
Cobalt		8.9	x	0.091	0.18
Copper		16.0	x	0.20	0.91
ron		22100	x	3.4	4.5
_ead		5.6	^	0.25	4.5 0.45
Magnesium		4890	x	3.4	18.2
Manganese		351	x	0.091	
//olybdenum		0.24	û	0.24	0.91
Nickel		12.4	x l	0.11	1.8
otassium		1920	,	37.2	3.6
Selenium		0.78	U	0.78	272
Silicon		295	"	5.1	0.91
Silver		0.15	U	0.15	9.1
Sodium		276	·		0.18
/anadium		45.7		53.5	109
Zinc		44.1	× V	0.085	1.8
		⊤*T. I	^ Y	0.36	0.91

7471A Mercury (CVAA)

Analysis Method: Prep Method:

7471A 7471A 1.0

Prep Batch:

DryWt Corrected: Y

Analysis Batch: 280-227591 280-227408

Instrument ID: Lab File ID:

MT_033 N/A 0.58 g

50 mL

Analysis Date: Prep Date:

Dilution:

Analyte

Mercury

05/27/2014 1852 05/27/2014 1300

> Result (mg/Kg) 0.011

Qualifier В

MDL

0.0058

Initial Weight/Volume:

Final Weight/Volume:

RL 0.018

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR07

Lab Sample ID:

280-55789-12

Client Matrix:

Solid

% Moisture:

1.3

Date Sampled: 05/21/2014 1058 Date Received: 05/23/2014 0945

6010B Metals (ICP)

Analysis Method: Prep Method:

6010B 3050B Analysis Batch: Prep Batch:

280-227791 280-227290

Qualifier

X

Х

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BN

Instrument ID: Lab File ID:

MT_026 26A052814A.asc

Dilution: Analysis Date: Prep Date:

Selenium

Dilution:

1.0 05/28/2014 1355 4/20/4

Initial Weight/Volume: Final Weight/Volume:

MDL

1.4

0.61

0.071

0.91

0.038

13.1

0.054

3.5

3.4

0.093

0.24

0.11

38.1

0.80

0.15

54.8

0.37

1.09 g 100 mL

RL

4.6

0.93

0.46

1.9

0.19

46.5

0.19

4.6

18.6

0.93

1.9

3.7

279

0.93

0.19

112

0.93

Prep Date:	05/27/2014 1230
Analyte -	DryWt Correc
Aluminum	
Arsenic	
Barium	

Alaryte .	Diyvvi Corrected: Y	Result (mg/Kg)
Aluminum		3850
Arsenic		2.1
Barium		37.9
Boron		0.91
Cadmium		0.092
Calcium		6400
Chromium		3.8
Iron		26700
Magnesium		4450
Manganese		319
Molybdenum		0.24
Nickel		6.9
Potassium		611
		~ · · ·

Silver Sodium Zinc Analysis Method: 6010B

Prep Method: 3050B 5.0 05/30/2014 1806

Analysis Date: Prep Date: 05/27/2014 1230 Analysis Batch: Prep Batch:

0.80

0.15

238

45.6

280-228120 280-227290

Instrument ID: Lab File ID: Initial Weight/Volume:

Final Weight/Volume:

MT 026 26a053014a.asc 1.09 g

100 mL

Analyte DryWt Corrected: Y Result (mg/Kg) Qualifier MDL RL. Antimony 1.8 UR 1.8 2.8 Beryllium 0.15 UJ 0.15 0.93 Cobalt 10.7 Х 0.46 4.6 Copper 16.1 х 1.0 4.6 Lead 4.2 1.3 2.3 Silicon 167 26.3 46.5 Vanadium 73.6 0.44 9.3

7471A Mercury (CVAA)

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Analyte

Mercury

Dilution:

7471A 7471A 1.0

05/27/2014 1855 05/27/2014 1300

DryWt Corrected: Y

Analysis Batch: Prep Batch:

280-227591 280-227408

Qualifier

Instrument ID: Lab File ID: Initial Weight/Volume:

MT_033 N/A 0.61 g

Final Weight/Volume:

MDL

0.0055

50 mL

RL

0.017

TestAmerica Denver

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Result (mg/Kg)

0.0055

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807 SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID J1TPV1	LAB ID 280-55789-1	ANALYSES REQUESTED 6010/7471/8310/8082/WTPH-D+/WTPH-G	ANALYSES PERFORMED 6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-5578 9-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-5578 9-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	8010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/6310/6082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO

No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs

The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroctor 1254 and Aroctor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroctor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

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Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barlum are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Company Contact Company Contact Joan Kassaner Telephone No. Joan Kassaner 375-4688 Project Describator Joan Kassaner Took Fale Remediation Sampling Location Sampling Location Sampling Location South-842, Verification, North earngling unit Coa AC Coa AC Company Ro-188 RC-188 RC	ashington (Closure Hanfo	ord CH	AIN OF CUS	TODY/	SAMP	LE AN	ALYS	IS REQ	LIEST	RC-1	189-302	Page	1013
Sample No. Sample No. Sample Date Sa	Q. Stowe			Company Contact Telephone No. Pr					Project Coordinator				Duss	rumaround
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Sample No. Sample No. Matrix Sample Date Sample Analysis See bon (1) Sample No. Matrix Sample Date Sample Date Sample Time Sample No. Matrix Sample Date Sample Time Sample No. Sample							2000		Method of Shi	pment	1			··· • · · · · · · · · · · · · · · · · ·
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Preservation Preservation Type of Container GP				A13	1147				Date of Participa			SPC		
POSSIBLE SAMPLE HAZARDS/REMARKS Potentially radioactive Volume 250mL 250mL 125mL	ne outbled 10					Cool 4C	Cool 4C	Cool 40	Gooi 4C					
Potentially radioactive Volume ZSOmL ZSOM				Type of Container	G/P	a.G	#G	G	Ga*	\vdash	+	T	1	
Special Handling and/or Storage Sample Analysis See Eam (1) in Special PAIs - 2010 PAIS - 201		ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3	1			1	
Sample Analysis See tent (1) in Special PAHs - 5310 PCBs - 8052 Range Range WTPH-0 Range WTPH-0 Sample No. Matrix Sample Date Sample Time STIPVI SOIL S-21-1Y O7 47 WTPH-0	Tadioactive	*		Volume	260mL	250mL	250mL	125mL	60 MmL 1255/12	ay.				
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WCH-11-009, WCH-11.	-001, PCC-07.	-012 EL-	1652-12		COA 01N842	2000		Method of Ship Commerci	al Carrier	/Feel	EX		
TestAmerica Denver		Umare	Property No.	31 147				Bill of Lading/		See 0			
Other Labs Shipped To			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 40	Cool 4C					
			Type of Container	G/P	#G	#G	G	Ga*				-	
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1	3		1	-		
Potentially redioactive			Volume	250mL	250mL	250mL	125mL	60					
Special Handling and/or	Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PC8a - 8082	TPH-Diess Range - WTPH-D	al TPH-Sasoline Range - + WTPH-G					
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Collector			Com	Company Contact Telephone No. Joan Kessner 375-4688						nator , JH			Data Tu	imaround		
				8ampling Location 100-N-84:2, Verification, South sampling unit						SAF No.			Folars			
ice Chest No.			Logbook No.		g unit			RC-189								
West -11-009	1. WUH-11-0	201, RCC-07		L-1652-12		01N842	2000	- 1	Method of Ship Commercia		16.0	C.				
Shipped To			Offsi	te Property No.		0111012			Bill of Lading/		1160					
TestAmerica				A13	31 147						I BUI No. See OSPC					
Other Labs Shipp	ed To			Preservation	Coal 4C	Cool 4C	Cool 4C	Cool 4C	Cooi 4C							
					G/P	₽Ģ	#G	в	Ge*							
		RDS/REMARKS		No. of Container(s)	1	1	1	1	3							
Potentially radioact	tv o			Volume	250mL	250mi	250mL	125mL	50mL							
Special Handl ഉ ഉ ഉ	ing and/or Sto	orage		Sample Analysis	See Item (1) in Special Instructions	PAHs - 6310	PCBs - 8062	TPH-Diess Range - WTPH-D	Rance -							
는 Sample	No.	Matrix	Sample Dat	te Sample Time	SWEET WA		Antanta				S ME Club	1200	CONTRACT	san shisarah		
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MTPX6		SOIL	5-21-1	4 1058	×	×	×	×	*							
II TPX7		SOIL	5-21-1	1115	×	×	×	1	×							
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J1TPX9		SOIL	5-21-14		×	*	HC .	<	×							
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Washington Collector	Compa	AIN OF CUS' iny Contact in Kessner	Tel	SAMPL optione No. 5-4688	EANA		Project Coordi	nator	RC-189-304 Page 2 of 3 Price Code Data Turnero						
Project Designation 100N Field Remediation						KESSNER, JH SAF No. RC-189		7		70	days				
ICE Chest No. WCH-11-009, WCH Shipped To	-11-001, RCC-07	Field Li						Method of Ship	oment al Carrier	I Feel E	 k				
TestAmerica Denver Other Labs Shipped To	•	Offsite	Property No. A13	1147				Bill of Lading//	ading/Air BBI No. See OSAC						
			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C							
			Type of Container	G/P	#G	øG.	G	Ga*					1		
POSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3				1	1		
Potentially radioactive			Volume	250mL	250mL	250mL	126mL	60mL							
Special Handling and/or	r Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PC8s - 5062	TPH-Disse Range - WTPH-D +	Range -							
는 Sample No.	Matrix	Sample Date			anni an	H MIGHT			国际电影			Marie Sale	A STATE OF THE PARTY OF		
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CHAIN OF PO Reinquished By/Removed From Chancy Stower		Received By/Stoned	Sign/Print Names		(1) IC	AL INSTRU P Metals - 60	INTR (Close	e-out List) (Alum	ninum, Antir	mony, Amenic, I	Barlum, Bery	Mium, Boron, (admium,		
Relinquished By/Removed From	Date/Time	1763	Selen	lum, Sillcon, S	iliver, Sodiu	opper, Iron, Lea Im, Vanadium, 2	u, magnesi Onc); Merc.	um, manganesc ury - 7471 - (CV	e, Molybolenk)	ım, Niickel, Pol	taseium,				
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FINAL SAMPLE Disposal Method Disposed By Date/Time															

Washington	Closure Hanfe	ord CH	AIN OF CUS	TODY/	SAMP	LE AN	ALYS	IS REO	S REQUEST RC-189-304 Page 3 of 3							
Collector Q. Stow	Compa	nny Contact In Kessner	Te	lephone No. 5-4688	,		Project Coordi	nator	Price Code	Price Code Data Turnaround						
Project Designation 100N Field Remediation	Sampli							KESSNER, JH 8AF No.		10 Marie 10		days				
ice Chest No.	les Observables							RC-189					75			
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Shipped To TestAmerica Denver		Offsite	Property No.	1110				Bill of Lading/								
Other Labe Shipped To			#15	147					See	05PC						
			Preservation	Cool 4C	Cool 4C	Coal 4C	Cool 40	Cool 4C								
	·		Type of Container	G/P	#G	#G	G	Ge*			†	_	†			
POSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3			\vdash					
Potentially radioactive			Volume	250mL	250mL	250mL	125mL	60mL								
Special Handling and/or യ യ വ ല	r Storage		Sample Analysis	See hem (1) in Special Instructions	PAHs - 8310	PC8s - 8082	TPH-Dise Range - WTPH-D	Range -								
ب Sample No.	Matrix	Sample Date	Sample Time	Aller H	CHANGE CONT.		以	A COLUMN SEC	M. P. Asserted	ar Alexandra	Memorala de la	Companie de Plante	HORSE AND MA			
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其TR07	SOIL	5-21-14	1058	*	×	×		×								
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CHAIN OF PO	Date/Time	Received By/Stored	Sign/Print Names	1442		AL INSTRU										
		oush a	With Stuly		(1) ICP Metals - 6010TR (Close-out List) (Aluminum, Antimony, Arsenic, Berium, Beryllium, Boron, Cadmum Calcium, Chromium, Cobait, Copper, Iron, Laed, Magneelum, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)							admum,				
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FINAL SAMPLE Disposed Method Disposed By Date/Time DISPOSITION						740	001					-				
WCH-EE-011																

Appendix 5

Data Validation Supporting Documentation

HNF-20433 REV 0

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

<u>V</u> ALIDATION LEVEL:	A	В		D	E
PROJECT: [00-20-841	۲	DATA PACKAG	E: JPO	80 7
VALIDATOR:	ELR	LAB: T	44	DATE: 6/	20/14
		*************************************	SDG:	JP0801	
		ANALYSES	PERFORMED		
\$W-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATI	RIX				
JITPVI	JITPVZ	litp	WY J	ITPYS) IT PX
JITPX7	JITPX8				JITRUZ
JITROY	JITR07			<u>' </u>	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
					-
Technical verification		,			Ye No N/A
2. INSTRUM	IENT PERFORM	ANCE AND CAL	BRATIONS (Leve	els D and E)	\wedge
Initial calibrations p				•	Yes No N/A
Initial calibrations a					
ICP interference che	ecks acceptable?		••••••	••••••	Yes No N/A
ICV and CCV check	ks performed on all	instruments?		•••••	Yes No N/A
ICV and CCV check	ks acceptable?,		•••••	•••••	Yes No N/A
Standards traceable					
Standards expired?					
Calculation check as					
Comments:					$\overline{}$

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)	
ICB and CCB checks performed for all applicable analyses? (Levels D, E)	Yes No N/A
ICB and CCB results acceptable? (Levels D, E)	Yes No (N/A
Laboratory blanks analyzed?	
Laboratory blank results acceptable?	
Field blanks analyzed? (Levels C, D, E)	Yea No N/A
Field blank results acceptable? (Levels C, D, E)	Ye No N/A
Transcription/calculation errors? (Levels D, E)	Yes No N/A
Comments:	
$\mathbf{F}_{\mathbf{C}} = \mathbf{C}_{\mathbf{C}}$	
A ACCUIDACY OF THE PROPERTY OF	
4. ACCURACY (Levels C, D, and E)	
MS/MSD samples analyzed?	
MS/MSD results acceptable?	
MS/MSD standards NIST traceable? (Levels D, E)	Yes No (N/A)
MS/MSD standards expired? (Levels D, E)	Yes No N/A
LCS/BSS samples analyzed?	
LCS/BSS results acceptable?	Yes No N/A
Standards traceable? (Levels D, E)	Yes No N/A
Standards expired? (Levels D, E)	Yes No A/A
Transcription/calculation errors? (Levels D, E)	Ves No N/A
Performance audit sample(s) analyzed?	Vac NO N/A
Performance audit sample results acceptable?	Var No NA
Comments: LCS - silican (132) - Jal	Yes No NA
MS - T - HUZZHI NIMI (III	
MS - Jlur - H	
- STORE - THE TREE	
	nogh

HNF-20433 REV 0

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)			
Duplicate RPD values acceptable?	Yes	/ '\ .No.	$)_{N/A}$
Duplicate results acceptable?		No No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	,	. ,	
MS/MSD standards expired? (Levels D, E)	Ves	No	YN/A
Field duplicate RPD values acceptable?	Yes	No) N/A
Field split RPD values acceptable?	Yes	No	N/A
Transcription/calculation errors? (Levels D, E)			
Comments: RPD - HHMI			
FD - 2 out			
6. ICP QUALITY CONTROL (Levels D and E)			ソ
ICP serial dilution samples analyzed?			
ICP post diseasting poils are selected as a	Yes	No	N/A
ICP post digestion spike required?	Yes	No	N/A
ICP post digestion spike values acceptable?	Yes	No	N/A
Standards traceable?	Yes	No	N/A
Standards expired?	Yes	No	N/A
Transcription/calculation errors?	Yes	No	N/A
			

HNF-20433 REV 0

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)			\wedge
Duplicate injections performed as required?	Yes	No	NA
Duplicate injection %RSD values acceptable?			
Analytical spikes performed as required?			
Analytical spike recoveries acceptable?			
Standards traceable?			
Standards expired?	Yes	No	N/A
MSA performed as required?			
MSA results acceptable?			
Transcription/calculation errors?			
Comments:			V
8. HOLDING TIMES (all levels)			
Samples properly preserved?		No	N/A
Sample holding times acceptable?			
Comments:			
·			

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INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)
Results reported for all requested analyses?
Results supported in the raw data? (Levels D, E)
Samples properly prepared? (Levels D, E)
Detection limits meet RDL?
Transcription/calculation errors? (Levels D, E)
Comments:

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Method Blank - Batch: 280-227290

Method: 6010B Preparation: 3050B

Lab Sample ID:

MB 280-227290/1-A

Analysis Batch:

280-227791

Instrument ID:

MT_026

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch: 280-227290 N/A

Lab File ID:

26A052814A.asc

Analysis Date: Prep Date:

05/28/2014 1304

Units:

mg/Kg

Initial Weight/Volume: Final Weight/Volume:

1 g 100 mL

Leach Date:

05/27/2014 1230 N/A

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	Ü	0.38	0.60
Arsenic	0.66	Ü	0.66	1.0
Barium	0.0940	В	0.076	0.50
Beryllium	0.033	Ü	0.033	
Boron	0.98	Ü	0.98	0.20
Cadmium	0.041	Ü		2.0
Calcium	14.1	Ü	0.041	0.20
Chromium	0.058	Ü	14.1	50.0
Cobalt	0.10	U	0.058	0.20
Copper	0.22		0.10	1.0
ron	4.05	U	0.22	1.0
_ead	0.27	В	3.8	5.0
Magnesium		U	0.27	0.50
Vanganese	3.7	U	3.7	20.0
Molybdenum	0.10	U	0.10	1.0
vickel	0.26	U	0.26	2.0
otassium	0.12	U	0.12	4.0
	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
/anadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-55789-1 Sdg Number: JP0807

Lab Control Sample - Batch: 280-227290

Method: 6010B Preparation: 3050B

Lab Sample ID:

Solid

LCS 280-227290/2-A

Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID: Lab File ID:

MT_026 26A052814A.asc

Client Matrix: Dilution: Analysis Date:

1.0 05/28/2014 1307 Leach Batch: Units:

N/A mg/Kg

Initial Weight/Volume: Final Weight/Volume:

1 g 100 mL

Prep Date: Leach Date: 05/27/2014 1230 N/A

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	201.6	101	82 - 116	
Antimony	50.0	52.14	104	82 - 110	
Arsenic	100	101.1	101	85 - 110	
Barium	200	206.3	103	87 - 112	
3eryllium	5.00	5.07	101	84 - 114	
Boron	100	100.1	100	80 - 120	
Cadmium	10.0	11.33	113	87 - 110	N
Calcium	5000	5048	10 1	82 - 114	
Chromium	20.0	20.90	105	84 - 114	
Cobatt	50.0	50.96	102	87 - 110	
Copper	25.0	26.55	106	88 - 110	
ron	100	105.6	106	87 - 120	
.ead	50.0	50.17	100	86 - 110	
Magnesium	5000	5068	101	90 - 110	
Manganese	50.0	51.16	102	88 - 110	
Molybdenum	100	103.3	103	86 - 110	
Nickel	50.0	50.78	102	87 - 110	
Potassium	50 00	5162	103	89 - 110	
Selenium	200	201.0	100	83 - 110	
Silicon	1000	133.0	13	10 - 70	
Silver	5.00	5.32	106	87 - 114	
Sodium	5000	5084	102	90 - 112	
/anadium	50.0	52.14	104	88 - 110	
Zinc	50.0	50.60	101	76 - 11 4	

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Matrix Spike - Batch: 280-227290

Method: 6010B Preparation: 3050B

Lab Sample ID:

280-55789-1

Analysis Batch: Prep Batch:

280-227791 280-227290 Instrument ID:

MT_026

Client Matrix: Dilution:

Solid 1.0

Leach Batch:

Units:

N/A mg/Kg Lab File ID: Initial Weight/Volume: 26A052814A.asc

Analysis Date: Prep Date:

05/28/2014 1317 05/27/2014 1230 Final Weight/Volume:

1.11 g 100 mL

Leach Date:

N/A

Analyte	Sample Re	sult/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7980		185	5873	-1136	50 - 200	4
Antimony	0.40	В	46.3	13.58	28	20 - 200	
Arsenic	3.3		92.7	49.61	50	76 - 111	N
Barium	62.0		185	130.4	37	52 - 159	N
Beryllium	0.032	U	4.63	2.22	48	72 - 105	N
Boron	0.96	В	92.7	47.55	50	80 - 120	N
Cadmium	0.13	В	9.27	5.53	58	40 - 130	
Calcium	7990		4630	75 94	-9	43 - 165	N
Chromium	11.6		18.5	17.24	30	70 - 200	N
Cobalt	10.4		46.3	29.20	41	72 - 106	N
Copper	16.1		23.2	21.76	24	37 - 187	N
Iron	24800		92.7	14780	-10853	70 - 200	4
Lead	5.5		46.3	27.06	46	70 - 200	N
Magnesium	6140		4630	6243	2	64 - 145	N
Manganese	379		46.3	246.9	-284	40 - 200	4
Molybdenum	0.25	U	92.7	46.98	51	75 - 103	N
Nickel	14.9		46.3	32.29	37	61 - 126	N
Potassium	1290		4630	3205	41	56 - 172	N
Selenium	0.83	U	185	96.63	52	76 - 104	N
Silicon	274		927	269.6	-0.5	20 - 200	N
Silver	0.16	U	4.63	2.72			N
Sodium	280		4630	2652	51		N
Vanadium	61.9		46.3				N
Zinc	47.5		46.3				N
Sodium Vanadlum	280 61.9	U	4630 46.3	•	59 51 -0.3 12	75 - 141 78 - 111 50 - 169 70 - 200	

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Duplicate - Batch: 280-227290

Method: 6010B Preparation: 3050B

Lab Sample ID:

280-55789-1

Analysis Batch:

280-227791

instrument ID:

MT_026

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch: 280-227290 N/A

Lab File ID:

26A052814A.asc

Analysis Date:

05/28/2014 1315

Units: mg/Kg Initial Weight/Volume: Final Weight/Volume:

1.03 g 100 mL

Prep Date:

05/27/2014 1230

Leach Date:

N/A

Analyte ·	Sample Re	sult/Qual	Result	RPD	Limit	Qual
Aluminum	7980		4790	50	40	M
Antimony	0.40	В	0.38	NC	40	U
Arsenic	3.3		2.64	23	30	
Barium	62.0		35.70	54	30	М
Beryllium	0.032	U	0.033	NC	30	U
Boron	0.96	В	0.98	NC	30	Ü
Cadmium	0.13	В	0.0629	68	30	BMN
Calcium	79 90		4836	49	30	М
Chromium	11.6		7.33	46	40	M
Cobalt	10.4		6.47	46	30	M
Copper	16.1		10.09	46	30	М
ron	24800		15090	49	40	M
Lead	5.5		3.55	44	40	М
Magnesium	6140		3799	47	30	M
Manganese	379		228.3	50	40	M
Molybdenum	0.25	U	0.26	NC	30	Ü
Nicket	14.9		9.63	43	30	M
Potassium	12 90		773.4	50	40	M
Selenium	0.83	U	0.86	NC	30	Ü
Silicon	274		157.5	54	40	M
Silver	0.16	U	0.16	NC	30	Ü
Sodium	280		167.4	50	30	M
Vanadium	61.9		36.76	51	30	M
Zinc	47.5		29.68	46	40	M

TestAmerica Denver

Client: Washington Closure Hanford Job Number: 280-55789-1

Sdg Number: JP0807

Method Blank - Batch: 280-227408 Method: 7471A Preparation: 7471A

Lab Sample ID: Client Matrix:

MB 280-227408/1-A

Analysis Batch: Prep Batch:

280-227591 280-227408 instrument ID: Lab File ID:

MT_033 N/A

Dilution:

Solid 1.0 05/27/2014 1815

Leach Batch: Units:

N/A mg/Kg

Initial Weight/Volume: Final Weight/Volume:

.6 g 50 mL

Analysis Date: Prep Date:

05/27/2014 1300

Leach Date:

N/A

Analyte

Result

Qual

MDL

RL

Mercury

0.0055

Ū

0.0055

0.017

Lab Control Sample - Batch: 280-227408

Method: 7471A Preparation: 7471A

Lab Sample ID: Client Matrix:

LCS 280-227408/2-A

Analysis Batch: Prep Batch:

280-227591 280-227408 Instrument ID: Lab File iD:

MT_033 N/A

Dilution: Analysis Date: Solid 1.0

Leach Batch: Units:

N/A mg/Kg

Initial Weight/Volume: Final WeightVolume:

.6 g 50 mL

Prep Date:

Analyte

Mercury

05/27/2014 1951 05/27/2014 1300

Leach Date: N/A

> Spike Amount 0.417

Result 0.434 % Rec. 104

Limit

87 - 111

Qual

Matrix Spike - Batch: 280-227408

Method: 7471A Preparation: 7471A

Lab Sample ID: Client Matrix:

280-55789-1 Solid

Analysis Batch: Prep Batch:

280-227591 280-227408 Instrument ID: Lab File ID:

MT_033 N/A

Dilution: Analysis Date: 1.0 05/27/2014 1825 Leach Batch: Units:

N/A

Initial Weight/Volume:

0.62 g

Prep Date: Leach Date: 05/27/2014 1300

mg/Kg

Final Weight/Volume:

50 mL

Analyte Mercury N/A

Sample Result/Qual 0.0087 В

Spike Amount 0.415 0.418

Result

% Rec.

99

Limit

87 - 111

Qual

TestAmerica Denver

Page 99 of 117

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Duplicate - Batch: 280-227408

Method: 7471A Preparation: 7471A

Lab Sample ID: Client Matrix:

280-55789-1

Solid

1.0

05/27/2014 1822

Prep Date: Leach Date:

Mercury

Dilution:

05/27/2014 1300

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-227591 280-227408

> N/A mg/Kg

Instrument iD:

Lab File ID:

N/A

Initial Weight/Volume: 0.56 g

Final Weight/Volume:

50 mL

MT_033

Analysis Date:

Analyte

Sample Result/Qual 0.0087

В

Result 0.00909

RPD 4

Limit

20

Qual

В

TestAmerica Denver

Page 100 of 117

Date:

20 June 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100N Field Remediation - Soil Full Protocol - Waste Subsite 100-N-84:2

Subject:

PCB - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	С	See note 1
J1TPV2	5/21/14	Soil	С	See note 1
J1TPX5	5/21/14	Soil	С	See note 1
J1TPX6	5/21/14	Soil	С	See note 1
J1TPX7	5/21/14	Soil	С	See note 1
J1TPX8	5/21/14	Soil	С	See note 1
J1TPX9	5/21/14	Soil	С	See note 1
J1TR01	5/21/14	Soil	С	See note 1
J1TR02	5/21/14	Soil	С	See note 1
J1TR04	5/21/14	Soil	С	See note 1
J1TR07	5/21/14	Soil	С	See note 1

^{1 –} PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

- Appendix 1. Glossary of Data Reporting Qualifiers
- Appendix 2. Summary of Data Qualification
- Appendix 3. Annotated Laboratory Reports
- Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
- Appendix 5. Data Validation Supporting Documentation
- Appendix 6. Additional Documentation Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Holding times are not applicable for PCB analysis.

Method Blank

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 50% to 150%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. Three analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other results met the RQL.

Completeness

Data Package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- J Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project: 100-N-84:2	PAGE_1_OF_1
COMMENTS: No qualifiers a	ssigned		

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV1

Lab Sample ID:

280-55789-1

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 0749 Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyl	(PCBs) by Gas	Chromatography
-------------------------------	---------------	----------------

Analysis Method: Prep Method:

Dilution:

Prep Date:

8082 3550C 1.0

Analysis Batch: Prep Batch:

280-227569 280-227280

Instrument ID:

Initial Weight/Volume:

SGC_W 30.4 g

Final Weight/Volume: Injection Volume:

5 mL 1 uL

05/28/2014 1905 Analysis Date: 05/23/2014 2053

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	1
Aroclor 1016		2.8	U	2.8	10	*************
Aroclor 1221		8.1	U	8.1	17	
Aroclor 1232		2.0	U	2.0	10	
Arodor 1242		4.7	U	4.7	10	
Aroclor 1248		4.7	U	4.7	10	
Arodor 1254		2.6	U	2.6	10	
Arodor 1260		2.6	U	2.6	10	
Surrogate		%Rec	Qualifier	Accep	tance Limits	:
Decachlorobiphenyl		95		59 - 1	30	
Tetrachloro-m-xylene		91		53 - 1	28	

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV2

Lab Sample ID:

280-55789-2

Client Matrix:

Surrogate

Decachlorobiphenyl

Tetrachloro-m-xylene

Solid

% Moisture:

%Rec

121

93

1.2

Date Sampled: 05/21/2014 0744 Date Received: 05/23/2014 0945

Acceptance Limits

59 - 130

53 - 128

	8082 Polyci	niorinated Bipheny	is (PCBs) by G	as Chro	matography		1
Analysis Method:	8082	Analysis Batch:	280-227786		Instrument ID:	SGC_W	:
Prep Method:	3550C	Prep Batch:	280-227280		Initial Weight/Volume:	31.3 g	
Dilution:	5.0				Final Weight/Volume:	5 mL	
Analysis Date:	05/29/2014 1313				Injection Volume:	1 uL	
Prep Date:	05/23/2014 2053				Result Type:	PRIMARY	
Analyte	DryWt Corrected: Y	Result (u	g/Kg)	Qualifie	r MDL	RL	
Arodor 1016		13		UD	13	49	***************************************
Arodor 1221		39		UD	39	80	
Arodor 1232		9.7		UD	9.7	4 9	
Aroclor 1242		23		UD	23	49	
Aroclor 1248		23		UD	23	49	
Arodor 1254		500		D	13	49	
Arodor 1260		13		UD	13	49	

Malia

Qualifier

D

D

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX5

Lab Sample ID:

280-55789-4

Client Matrix:

Solid

05/23/2014 2053

% Moisture:

2.8

Date Sampled: 05/21/2014 1051

Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) D)	y Gas	Chromatography
--------------------------------------	------	-------	----------------

Analysis Method: Prep Method:

8082 3550C Analysis Batch: Prep Batch:

280-227569

Instrument ID:

Initial Weight/Volume:

SGC_W 31.6 g 5 mL

Dilution: Analysis Date: Prep Date:

1.0 05/28/2014 1952

280-227280

Final Weight/Volume: Injection Volume: Result Type:

1 UL PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Arodor 1016		2.7	U	2.7	9.8
Arodor 1221		7.8	U	7.8	16
Arodor 1232		2.0	U	2.0	9.8
Arodor 1242		4.6	U	4.6	9.8
Arodor 1248		4.6	U	4.6	9.8
Arodor 1254		2.5	U	2.5	9.8
Arodor 1260		2.5	U	2.5	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	91		59 - 130
Tetrachlom-m-vylene	91		53 - 128

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX6

Lab Sample ID:

280-55789-5

Client Matrix:

Solid

% Moisture:

1.1

Date Sampled: 05/21/2014 1058 Date Received: 05/23/2014 0945

8082 Polychiorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method: Prep Method:

8082 3550C Analysis Batch: Prep Batch:

280-227569

Instrument ID:

SGC_W

Dilution:

1.0

280-227280

Initial Weight/Volume: Final Weight/Volume:

30.5 g 5 mL

Injection Volume:

1 uL

Analysis Date: Prep Date:

05/28/2014 2103 05/23/2014 2053

Result Type:

PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Arodor 1016		2.8	U	2.8	10
Arodor 1221		8.0	U	8.0	16
Aroclor 1232		2.0	U	2.0	10
Arodor 1242		4.6	U	4.6	10
Arodor 1248		4.6	U	4.6	10
Arodor 1254		2.6	U	2.6	10
Arodor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachioro-m-xviene	89		53 - 128

Maley

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX7

Lab Sample ID:

D: 280-55789-6

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 1115 Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography								
Analysis Method:	8082	Analysis Batch:	280-227569		Instrument ID:	sgc_w		
Prep Method:	3550C	Prep Batch:	280-227280		Initial Weight/Volume:	30.4 g		
Dilution:	1.0				Final Weight/Volume:	5 mL		
Analysis Date:	05/28/2014 2126				Injection Volume:	1 uL		
Prep Date:	05/23/2014 2053				Result Type:	PRIMARY		
Analyte	DryWt Corrected: Y	Result (ug	g/Kg)	Qualifier	MDL.	RL		
Arodor 1016		2.8		U	2.8	10		
Arodor 1221		8.0		Ų	8.0	17		
Arodor 1232		2.0		U	2.0	10		
Arodor 1242		4.7		U	4.7	10	,	
Arodor 1248		4.7		U	4.7	10		
Arodor 1254		2.6		U	2.6	10	- 4	
Arodor 1260		2.6		U	2.6	10		
Surrogate		%Rec		Qualifier	Accepta	nce Limits		
Decachlorobiphenyl		94		and the second s	59 - 130			
Tetrachloro-m-xylen	ie .	91			53 - 128			

Vilaly

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX8

Lab Sample ID:

280-55789-7

Client Matrix:

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 1120 Date Received: 05/23/2014 0945

8082 Polychiorinated Biphenyls	(PCBs) by Gas	Chromatography
--------------------------------	---------------	----------------

Analysis Method: Prep Method:

8082 3550C Analysis Batch: Prep Batch: 280-227569

Instrument ID: Initial Weight/Volume:

SGC_W 31.0 g 5 mL

Dilution: Analysis Date: 1.0

280-227280

Final Weight/Volume: Injection Volume:

Result Type:

5 ML 1 uL PRIMARY

Prep Date:

05/28/2014 2213 05/23/2014 2053

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Arodor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.9	U	7.9	16
Arodor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Arodor 1248		4.6	U	4.6	9.8
Arocior 1254		2.6	Ü	2.6	9.8
Aroclor 1260		2.6	U	2.6	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	89		53 - 128

Malia

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX9

Lab Sample ID:

280-55789-8

Client Matrix:

Solid

% Moisture:

3.4

Date Sampled: 05/21/2014 0848 Date Received: 05/23/2014 0945

53 - 128

8082 Polychlorinated	Biphenyls (PCE	s) by Gas	Chromatography
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Analysis Method: Prep Method:

8082 3550C Analysis Batch:

280-227569

Instrument ID: Initial Weight/Volume: SGC_W 30.5 g

Dilution: Analysis Date:

Tetrachloro-m-xylene

1.0

Prep Batch:

97

280-227280

Final Weight/Volume: Injection Volume:

5 mL

Prep Date:

05/28/2014 2237 05/23/2014 2053

Result Type:

1 uL **PRIMARY**

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	1
Aroclor 1016		2.8	U	2.8	10	····
Aroclor 1221		8.2	U	8.2	17	
Arodor 1232		2.0	U	2.0	10	
Aroclor 1242		4.7	U	4.7	10	
Aroclor 1248		4.7	U	4.7	10	
Aroclor 1254		6.3	J	2.6	10	
Arodor 1260		2.6	U	2.6	10	
Surrogate		%Rec	Qualifier	Acceptance Limits		
Decachlorobiphenyl		78		50 - 130	<u> </u>	

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR01

Lab Sample ID:

280-55789-9

Client Matrix:

Solid

% Moisture:

1.7

Date Sampled: 05/21/2014 0818 Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method: Prep Method: 8082 3550C Analysis Batch:

280-227569

Instrument ID:

SGC_W 31.3 g

Dilution:

Tetrachloro-m-xylene

1.0

Prep Batch:

92

280-227280

Initial Weight/Volume: Final Weight/Volume:

53 - 128

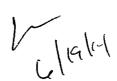
5 mL

Analysis Date: Prep Date:

05/28/2014 2301 05/23/2014 2053 Injection Volume: Result Type:

1 uL PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	i
Arodor 1016		2.7	U	2.7	9.8	
Arodor 1221		7.8	U	7.8	16	!
Arodor 1232		2.0	U	2.0	9.8	
Arodor 1242		4.5	U	4.5	9.8	
Arodor 1248		4.5	U	4.5	9.8	
Arodor 1254		2.5	U	2.5	9.8	
Arodor 1260		2.5	U	2.5	9.8	
Surrogate		%Rec	Qualifier	Acceptance Limits		
Decachlorobiphenyl		89		59 - 130		1



Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR02

Lab Sample ID:

280-55789-10

Client Matrix:

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 0857 Date Received: 05/23/2014 0945

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography							1
Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date:	8082 3550C 1.0 05/28/2014 2324 05/23/2014 2053	Analysis Batch: Prep Batch:	280-227569 280-227280	in Fi In	strument ID: uitial Weight/Volume: inal Weight/Volume: ijection Volume: esult Type:	SGC_W 31.4 g 5 mL 1 uL PRIMARY	:
Analyte	DryWt Corrected: Y	Result (uç	/Kg) Q	ualifier	MDL	RL	
Aroclor 1016		2.7	U		2.7	9.7	
Arodor 1221		7.8	U		7.8	16	1
Arodor 1232		1.9	U		1.9	9.7	
Aroclor 1242		4.5	U		4.5	9.7	
Aroclor 1248		4.5	U		4.5	9.7	
Arodor 1254		2.5	U		2.5	9.7	
Arodor 1260		2.5	U		2.5	9.7	
Surrogate		%Rec	Q	ualifier	Acceptar	nce Limits	
Decachlorobipheny		90			59 - 130	and the state of the	
Tetrachloro-m-xyler	ne	88			53 - 128		

Welalu

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR04

Lab Sample ID:

280-55789-11

Client Matrix:

Tetrachloro-m-xylene

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 0803 Date Received: 05/23/2014 0945

	8082 Polyci	Diychlorinated Biphenyls (PCBs) by Gas Chromatography									
Analysis Method: Prep Method: Dilution: Analysis Date: Prep Date:	ep Method: 3550C lution: 1.0 nalysis Date: 05/28/2014 2348		280-227569 280-227280		Instrument ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Result Type:	SGC_W 30.1 g 5 mL 1 uL PRIMARY					
Analyte	DryWt Corrected: Y	Result (u	g/Kg)	Qualifier	MDL	RL					
Arodor 1016		2.8		Ú	2.8	10					
Arodor 1221		8.1		U	8.1	17					
Aroclor 1232		2.0		U	2.0	10	,				
Aroclor 1242		4.7		U	4.7	10	:				
Arodor 1248		4.7		U	4.7	10	:				
Arodor 1254		2.6		U	2.6	10					
Arodor 1260		2.6		U	2.6	10					
Surrogate		%Rec		Qualifier	Accepta	nce Limits					
Decachlorobipheny	•	98			59 - 130						

93

Valalia

53 - 128

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR07

Lab Sample ID:

280-55789-12

Client Matrix:

Arodor 1260

Decachlorobiphenyl

Tetrachloro-m-xylene

Surrogate

Solid

% Moisture:

2.6

97

90

%Rec

1.3

Date Sampled: 05/21/2014 1058 Date Received: 05/23/2014 0945

9.9

Acceptance Limits

59 - 130 53 - 128

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography												
Analysis Method:	8082	Analysis Batch:	280-227569		Instrument ID:	SGC_W						
Prep Method:	3550C	Prep Batch:	280-227280		Initial Weight/Volume:	30.7 g						
Dilution:	1.0				Final Weight/Volume:	5 mL						
Analysis Date:	05/29/2014 0011				Injection Volume:	1 UL						
Prep Date:	05/23/2014 2053				Result Type:	PRIMARY	3					
Analyte	DryWt Corrected: Y	Result (u	g/Kg)	Qualifie	r MDL	RL	i					
Arodor 1016		2.7	againe in the fact of the second	U	2.7	9.9						
Aroclor 1221		7.9		U	7.9	16						
Arodor 1232		2.0		U	2.0	9.9	1					
Arodor 1242		4.6		U	4.6	9.9						
Arodor 1248		4.6		U	4.6	9.9						
Aroclor 1254		2.6		U	2.6	9.9						

U

Qualifier

Valaly

2.6

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807 SAF#: RC-189

Date SDG Closed: May 23, 2014 Data Deliverable: 7 Day / Summary

CLIENT ID	LABID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/6310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	8010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO

No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs

The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Page 3 of 117

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroctor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 5010B/7471A

Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Sillcon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Bartum are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Clo Collector		Com	CHAIN OF CUSTODY/SAMPLE ANALYSI Company Contact Joan Kessner Telephone No. 375-4688										Data Tu	maround	
Project Designation 100N Field Remediation			pling Lo	cation 4:2, Verification, No	with earneding	n unit			SAF No. RC-189			+	DA	\checkmark	
ce Chest No.			Logbo			COA		-	Method of Ships					<i></i>	
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Shipped To TestAmerica Denver			te Prop	erty No. A131	147				Bill of Lading(A	Ir Bill No.	ive of	SPC_			
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Special Handling and/or Sto to g g g	orage .		s	iample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBe - 8082	TPH-Diss Range - WTPH-D	Renge -						
Sample No.	Matrix	Sample D	ate	Sample Time	對熱國		1000000					KARAN.	NEEDING.		
YITPV1	SOIL	5-21	-14	0749	×	K	*	*	×						
BITPV2	SOIL	5-21	- 14	0744	×	×	~	K	×						
ZIPV3	SOU	7 200													
JITPV4	SOIL	7 3	/211	44											
MIPUS DUS YES/14	SOIL	5 31 1	v	0736	×	×	×-	×-	700	1-19					
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FINAL SAMPLE Disposal Method		Di Di	posed By	Deter	Time										

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p Sample No.	Matrix	Sample Date	Sample Time	迅機翻翻	MARKET THE PARTY OF THE PARTY O	泰明智慧		THE OWNERS		SE PRO			
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ice Chest No.	<u> </u>		gbook No.		COA			Method of Shipm		1 _ 0	_		
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Potentially radioactive	- I LOOP I CLIM W. CO.		Volume	250ml.	250ml.	250mL	125mL	. 60mL					
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Sample No.	Matrix	Sample Date	Sample Time	MARKET THE	用能分解			REMARKS	建設計			作的英国新	
th TPX5	SOIL	5-21-1	r 1051	*	×	*	*	×					
OHTPX6	SOIL	5-21-11		×	×	×	×	*					
13 трх7	SOIL	5-21-14		×	×	×	le:) e					
J1TPX8	SOIL	5-21-14		×	*	74	×	*					
J1TPX9	SOIL	5-21-14	0848	×	*	K	×	×					
CHAIN OF PO			Sign/Print Names		SPEC	IAL INSTR	UCTIONS	3				113474	
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roject Designation			ng Location	18	BAF No. RC-189				7do	ays.			
100N Field Remediation ce Chest No.			100-N-84:2, Verification, South sampling unit Field Logbook No. COA						Method of Shipment				
uc+-11-009, wc+-11-	no) Rec-07-		1652-12		01N8422	000		Commercial		Feel Ex	<u> </u>		
Shipped To TestAmerica Denver		Offsite	Property No. A13	1147				Bill of Lading/Al	r BIII No. See	08	><	311	
Other Labs Shipped To			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
			Type of Container	G/P	#G	aG	G	Ge*					
POSSIBLE SAMPLE HAZARDS/REMARKS			No. of Container(s)	1	1	1	1	3					·
Potentially radioactive			Volume	250mL	250mL	. 250ml.	125mL	60mL					
Special Handling and/or S ଅ ଅ ଅ ଓ ଓ	torage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PC8s - 8082	TPH-Oise Range - WIPH-D	Range - + WTPH-G					
© Sample No.	Matrix	Sample Date	Sample Time	INDEED!	建筑和建筑	HEATH	Miles	S MANUE	Real Parts	September 1		ALC: NO	AL VISION OF
STR00		ws	5/21/14										
INTRO1	SOIL	5121119	1 0818	*	~	K	×	×					<u> </u>
FTR02	SOIL	5/21/1	4 0857	×	×	×	<u>×</u>	*			1		-
J1TR03	SOIL		Bus 5/21/1	ļ									1
J1TR04	SOIL	5-21-11	0803	×	×	×	×	>=			1		
Retinquiened By/Removed From	Date/Time	Received ByrSton Received ByrSton Fridge 3 Received, ByrSton	M Bullialla 72/11 ad in pater/line WSHEA 77/14 od in Data/Time X	y 144 y 1763 0816	Z (1) I Cask Sek	Jan Change	010TR (Ck	eoes-out List) (Alu Copper, Iron, Le dium, Vanadium,	ROMAN DATE	LITT), MANUS KANISTO	SE. NUYUUSII	un, racord, Fi	Cadmium, ptasaium,
Relinquished By/Removed From Relinquished By/Removed From Relinquished By/Removed From	Date/Time Date/Time Date/Time	Received By/Ston Received By/Ston	S-ZS-) ed in Dete/line	4 945		JP0	807		end energy	(-	SMS DAT 5/22	TH.	ž.
FINAL SAMPLE Disposal Metro	od .	Dispo	need By Date/	Time									

Washington	Closure Hanfo	rd C	HAIN	OF CUST	ODY/S	AMPL	EANA	LYS	IS REQU	EST	RC-18	9-304	Page 3	ors
Collector Company Contact Joan Kessner			Tele	phone No. -4688			Project Coordina KESSNER,	etor	Price Code			lays.		
Project Designation Sampling Location 100N Field Remediation 100-N-84:2, Ver			cation 2.2, Verification, So	uth sampling	unit	*		SAF No. RC-189				10	2475	
We the second se		d Logbo			OA			Method of Ships		10 10	-			
WH-11-009, WEH-1	11-001 RCL-07-0	16-	EL-1652			01N8422	000		DV2 - 61 - 2415	- 1724 51-	I Fed E	<u> </u>		
Shipped To TestAmerica Denver		Offs	itte Prop	A131	147				DIE OF LINKINGS	Sec	i aspc			
Other Labs Shipped To				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	C Cool 4C					
		Ty	pe of Container	G/P	#G	eG	G	Ge*						
POSSIBLE SAMPLE HA	ZARDS/REMARKS		No	o. of Container(s)	1	1	1	1	3					
Potentially radioactive				Volume	250mL	250mL	250mL	125m	L 60mL					
Special Handling and/o	r Storage		s	ample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Dir Range WTPH-I	TPH-Gasolina Range - WTPH-G					
Sample No.	Matrix	Sample I	Date	Sample Time	LENGT		HILLS			網網	HE WEST	2011	HELD	
STR05	- 30IL	Tows	61										-	-
MTR06	SOIL	-5	, 24,					_		_			-	
йт R07	SOIL	5-21	-14	1058	×	×_	*	×	×	_	-	<u> </u>	-	-
					-			\vdash		-	_	 		
CHAIN OF F Realinquished By/Removed From Resinquished By/Removed From	Detertine Detertine Detertine Detertine Detertine	Received By/ Received By/ Fridge Received By/ Received By/ Repaired By/ Repaired By/	Stored in Stored in EX Stored in EX Stored in	Detailine September 921/ SHEA 921/ Detailine Detailine	y (703 14 081 5-14 948	(1) II Calco Sele	I Okanamie	010TR (C um, Cobal Silver, S	Rose-out List) (Alus t, Copper, Iron, Le odium, Vanadium,	on Moon	ACTION BENDONO	v)	EVIEWED	Cadmium, stassium,
FINAL SAMPLE Disposel N	Method		Disposed B	y Dela	/Time		ال							
WCH-EE-011	Sept.													

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	. D	E				
PROJECT: /	00-10-81	112	DATA PACKAG	E: JP08	07				
VALIDATOR:	ELR	LAB: TA		DATE:	15/14				
			SDG:	JP080	7				
	ANALYSES PERFORMED								
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)						
SAMPLES/MAT	RIX								
JITPV	1 317	DNS 1	ITPXS	JITPXG					
JITPX-	7 317	PX9)	ITPX9	JITROI					
JITRO	2 11	troy	1/5/207						
					soil				
Technical verifica	ACKAGE COMPI	present?	***************************************		Yes No N/A				
Initial calibrations	JMENT PERFORI	• • • • • • • • • • • • • • • • • • • •							
Continuing calibr	ations acceptable?				Yes No N/A				
					Yes No N/A				
					Yes No N/AYes No N/A				
					Yes No N/A				
,									

3. BLANKS (Levels B, C, D, and E)			$ \bigcirc $
Calibration blanks analyzed? (Levels D, E)	Yes 1	16	
Calibration blank results acceptable? (Levels D, E)	Yes	No (N/A
Laboratory blanks analyzed?	Yes 1	No	
Laboratory blank results acceptable?	Yes	No	N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yes 1	Nd	MA
Field/trip blank results acceptable? (Levels C, D, E)	Yes T	Nol	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	MIA
Comments:	uo Prz	- 	
		<u></u>	
		i-	
4. ACCURACY (Levels C, D, and E)	(Vas)	No	NI/A
Surrogates analyzed?		'	N/A
Surrogate recoveries acceptable?			
Surrogates traceable? (Levels D, E)	Yes	No	$\times \times$
Surrogates expired? (Levels D, E)		No	(N/A)
MS/MSD samples analyzed?	(Yes)		N/A
MS/MSD results acceptable?	(Ye)s	No	\mathbb{M}
MS/MSD standards NIST traceable? (Levels D, E)	Yes	,	DHA)
MS/MSD standards expired? (Levels D, E)	Yes	No	
LCS/BSS samples analyzed?		No	N/A
LCS/BSS results acceptable?	(Yes)	No	11
Standards traceable? (Levels D, E)	Yes	No	
Standards expired? (Levels D, E)	Yes	No	
Transcription/calculation errors? (Levels D, E)	Yes	No.	(N/A)
Performance audit sample(s) analyzed?	Yes(No) N/A
Performance audit sample results acceptable?	Yes	No	N/A
Comments:			
	No Patr		

5.	PRECISION (Levels C, D, and E)	
-	icate RPD values acceptable?	/
	icate results acceptable?	
	MSD standards NIST traceable? (Levels D, E)	
	MSD standards expired? (Levels D, E)	
Field	duplicate RPD values acceptable?	Yes No NA
	I split RPD values acceptable?	
Trans	scription/calculation errors? (Levels D, E)	Yes Nd N/A
Com	ments:	
6.	SYSTEM PERFORMANCE (Levels D and E)	
	omatographic performance acceptable?	Yes No N/A
Posi	tive results resolved acceptably?	Yes No N/A
	ments:	
Com	mients.	
		1
		/
		1
7.	HOLDING TIMES (all levels)	
Sam	aples properly preserved?	
Sam	aple holding times acceptable?	Yes No N/A
	nments:	
		· · ·

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIM	ixxo (un		
levels)			
Compound identification acceptable? (Levels D, E)			
Compound quantitation acceptable? (Levels D, E)			
Results reported for all requested analyses?	(Yes)	No	N/A
Results supported in the raw data? (Levels D, E)	Yes	NO	
Samples properly prepared? (Levels D, E)	Yes	No	N/A
Detection limits meet RDL?			N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	NŽA)
Comments:		_	
3 mg			
9. SAMPLE CLEANUP (Levels D and E)		:	\sim
Fluoricil ® (or other absorbent) cleanup performed?			
Lot check performed?			
Check recoveries acceptable?			
GPC cleanup performed?	Yes	No	N/A
GPC check performed?			
GPC check recoveries acceptable?	Yes	No	N/A
GPC calibration performed?			
GPC calibration check performed?			
GPC calibration check retention times acceptable?	Yes	No	N/A
Check/calibration materials traceable?			
Check/calibration materials Expired?	Yes	No	N/A
Analytical batch QC given similar cleanup?	Yes	No	N/A
Transcription/Calculation Errors?	Yes	No	N/A
Comments:		_	_/
	P		

Appendix 6

Additional Documentation Requested by Client

Quality Control Results

Job Number: 280-55789-1

Sdg Number: JP0807

Method Blank - Batch:	280-227280	Method: 8082
		Preparation: 3550C

Client: Washington Closure Hanford

Lab Sample ID: Client Matrix: Dilution: Analysis Date: Prep Date: Leach Date:	MB 280-227280/1-A Solid 1.0 05/28/2014 1818 05/23/2014 2053 N/A	Analysis Batch: Prep Batch: Leach Batch: Units:	280-227569 280-227280 N/A ug/Kg	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Column ID:	SGC_W 05280020.D 30.5 g 5 mL 1 uL PRIMARY
--	--	--	--	--	--

Analyte	Result	Qual	MDL	RL	1
	2.7	U	2.7	9.8	1
Arodor 1016		Ü	7.9	16	i
Arodor 1221	7.9	-	2.0	9.8	
Arodor 1232	2.0	U	4.6	9.8	
Arodor 1242	4.6	U		9.8	:
Arodor 1248	4.6	U	4.6		
Arodor 1254	2.6	U	2.6	9.8	
Arodor 1260	2.6	U	2.6	9.8	
Surrogate	% Rec		Acceptance Limits		
Decachiorobiphenyl	105		59 - 130		
Tetrachloro-m-xylene	95		53 - 128		1

Tellacilloto III xylone		
	`	Mathad: ROR2

ab Control Sample - Batch: 280-227280	Method: 8082
ab Colladi Sample - Datolli. 200 22. 200	Preparation: 3550C

Lab Sample ID: Client Matrix: Dilution: Analysis Date: Prep Date: Leach Date:	LCS 280-227280/2-A Solid 1.0 05/28/2014 1842 05/23/2014 2053 N/A	Analysis Batch: Prep Batch: Leach Batch: Units:	280-227569 280-227280 N/A ug/Kg	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Column ID:	SGC_W 05280021.D 32.3 g 5 mL 1 uL PRIMARY
--	---	--	--	--	--

Analyte	Spike Amount	Result	% Rec.	Limit	Qual	
Arador 1018 Arador 1260	31.0 31.0	34.7 34.7	112 112	54 - 132 62 - 129	1	
Surrogate	% Rec		Acceptance Limits			
Decachlorobiphenyl		106		59 - 130 53 - 128		
Tetrachloro-m-xylene	`	97		00 120	:	

Quality Control Results

Job Number: 280-55789-1

Sdg Number: JP0807

Matrix Spike Duplicate Recovery Report - Batch: 280-227280

280-55789-4

Method: 8082 Preparation: 3550C

Initial Weight/Volume:

Final Weight/Volume:

Instrument ID:

Lab File ID:

Column ID:

MS Lab Sample	ID:
Client Matrix:	

280-55789-4

Client: Washington Closure Hanford

Solid 1.0

1.0

N/A

Dilution: Analysis Date: 05/28/2014 2016 05/23/2014 2053 Prep Date:

Leach Date:

MSD Lab Sample ID: Solid Client Matrix:

Dilution:

05/28/2014 2040 Analysis Date: 05/23/2014 2053 Prep Date:

Leach Date:

Prep Batch: Leach Batch:

Analysis Batch:

Prep Batch:

Leach Batch:

Analysis Batch: 280-227569

280-227280 N/A

280-227569

280-227280

N/A

Instrument ID: Lab File ID: Initial Weight/Volume:

Injection Volume:

Final Weight/Volume: Injection Volume: Column ID:

05280026.D 30.9 g 5 mL

SGC_W

31.9 g

5 mL

1 uL

PRIMARY

SGC_W

05280025.D

1 uL. PRIMARY

	<u>%</u>	Rec.					
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qua
A	73	95	54 - 132	30	26		•
Arodor 1016 Arodor 1260	93	102	62 - 129	12	26		i
Surrogate		MS % Rec	MSD ^c	% Rec		eptance Limit	S :
Decachlorobiphenyl		91	97			59 - 130	
Tetrachloro-m-xylene		64	92			53 - 128	

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227280

Method: 8082 Preparation: 3550C

MS Lab Sample ID:

Client Matrix:

Solid 1.0

Dilution: Analysis Date: Prep Date:

05/23/2014 2053

Leach Date:

05/28/2014 2016

280-55789-4

N/A

MSD Lab Sample ID: Client Matrix:

280-55789-4 Solid

Dilution: Analysis Date:

1.0 05/28/2014 2040

Prep Date: Leach Date: 05/23/2014 2053

N/A

MSD MS MSD Spike Result/Qual Result/Qual **Amount**

Result/Qual Analyte 31.7 23.4 33.3 32.3 2.7 Arodor 1016 33.8 33.3 29.9 32.3 11 2.5 Aroclor 1260

MS Spike

Amount

Units: ug/Kg

Sample

Date:

20 June 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100N Field Remediation - Soil Full Protocol - Waste Subsite 100-N-84:2

Subject:

Polyaromatic Hydrocarbons - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	C	See note 1
J1TPX5	5/21/14	Soil	С	See note 1
J1TPX6	5/21/14	Soil	С	See note 1
J1TPX7	5/21/14	Soil	С	See note 1
J1TPX8	5/21/14	Soil	С	See note 1
J1TPX9	5/21/14	Soil	С	See note 1
J1TR01	5/21/14	Soil	С	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	C	See note 1
J1TR07	5/21/14	Soil	С	See note 1

^{1 -} PAH by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as

follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results

are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The
 data may not be valid for some specific applications (i.e., usable for decisionmaking purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

POLYAROMATIC HYDROCARBONS DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project:	100-N-84:2	PAGE_1_OF_1
COMMENTS: No qualifiers a	ssigned			

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3 Annotated Laboratory Reports

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV1

Lab Sample ID:

280-55789-1

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 0749

Date Received: 05/23/2014 0945

8310	PAHs	(HPL	.CI

Analysis Method: Prep Method:

8310

3550C

1.0

Client: Washington Closure Hanford

Analysis Date:

Dilution:

05/29/2014 1915 05/23/2014 1815 Analysis Batch: 280-227852 Prep Batch:

280-227266

Instrument ID: Initial Weight/Volume: Final Weight/Volume: CHHPLC G 30.9 g 4 mL 20 uL

Injection Volume: Result Type:

PRIMARY

Prep Date: 05/23	/2014 1815		Rest	nt rype:	PRIMART
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	Ū	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	υ	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40
Surrogate		%Rec	Qualifier	Acce	ptance Limits
Terphenyl-d14 (SUR)		83		72 -	115

16/19/14

Page 43 of 117

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV2

Lab Sample ID:

280-55789-2

Client Matrix:

Solid

% Moisture:

1.2

Date Sampled: 05/21/2014 0744

Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method:

8310

Analysis Batch:

280-227852

Instrument ID: Initial Weight/Volume: CHHPLC_G 31.6 g

Prep Method: Dilution:

3550C 1.0

Prep Batch:

280-227266

Final Weight/Volume:

4 mL

Analysis Date: Prep Date:

05/29/2014 1946 05/23/2014 1815 Injection Volume: Result Type:

20 uL PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		120	X	9.6	96
Acenaphthylene		8.6	U	8.6	96
Anthracene		110		2.9	19
Benzo[a]anthracene		620		3.1	14
Benzo[a]pyrene		640		6.2	14
Benzo[b]fluoranthene		480	NX	4.0	14
Benzo[g,h,i]perylene		400		6.9	29
Benzo[k]fluoranthene		220		3.8	14
Chrysene		700		4.7	38
Dibenzo(a,h)anthracene		85	X	11	29
Fluoranthene		820		12	38
Fluorene		95		5.1	29
Indeno[1,2,3-cd]pyrene		400		12	29
Naphthalene		12	U	12	96
Phenanthrene		210		12	38
Pyrene		1200		12	38
Surrogate		%Rec	Qualifier	Accepta	ince Limits
Terphenyl-d14 (SUR)		103		72 - 115)

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX5

Lab Sample ID:

280-55789-4

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 1051

Date Received: 05/23/2014 0945

8310 PAHs (HPLC)

Analysis Method: Prep Method:

8310

Analysis Batch:

280-227852

instrument ID:

CHHPLC_G 31.1 g

Dilution:

3550C 1.0

Prep Batch:

280-227266

Initial Weight/Volume: Final Weight/Volume:

4 mL

Analysis Date: Prep Date:

05/29/2014 2117 05/23/2014 1815 Injection Volume: Result Type:

20 uL PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		7.7	J	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo(g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	υ	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		14	J	13	40
Fluorene		5.2	U	5.2	30
indeno[1,2,3-cd]pyrene		12	υ	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		18	J	12	40
Surrogate		%Rec	Qualifier	Accepta	nce Limits
Terphenyl-d14 (SUR)	بقور بردادة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالمة والمعالم	84	aderes ade au en especial de desarra en agra en de desarra en en especial en de en en especial en de en en en	72 - 115	

Velialia

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX6

Lab Sample ID:

280-55789-5

05/29/2014 2218

Client Matrix:

Dilution:

Analysis Date:

Solid

% Moisture:

1.1

Date Sampled: 05/21/2014 1058

Date Received: 05/23/2014 0945

8310 PA	He /h	IDI CI

Analysis Method:	8310
Prep Method:	3550

3550C 1.0 Analysis Batch: Prep Batch:

280-227852 280-227266 Instrument ID: Initial Weight/Volume:

CHHPLC_G e: 31.3 g

Final Weight/Volume: Injection Volume: Result Type: 4 mL 20 uL PRIMARY

Prep Date:	ep Date: 05/23/2014 1815		Resu	ılt Type:	PRIMARY
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	υ	8.7	97
Anthracene		5.8	J	3.0	19
Benzo[a]anthracene	e	3.1	U	3.1	15
Benzo[a]pyrene		19		6.2	15
Benzo[b]fluoranther	ne	4.1	U	4.1	15
Benzo[g,h,i]perylen		7.0	U	7.0	29
Benzo[k]fluoranther		7.5	J	3.8	15
Chrysene		24	JX	4.7	39
Dibenzo(a,h)anthra	cene	11	U	11	29
Fluoranthene		53	Χ	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyr	rene	12	JΧ	12	29
Naphthalene		12	U	12	97
Phenanthrene		18	J	12	39
Pyrene		53		12	39
Surrogate		%Rec	Qualifier	Acce	ptance Limits
Terphenyl-d14 (SU	R)	84		72 -	115

4/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX7

Lab Sample ID:

280-55789-6

Client Matrix:

Analysis Date:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 1115 Date Received: 05/23/2014 0945

8310	PAH	e /HP	I CI

Analysis Method:	8310
Prep Method:	3550C
Dilution:	1.0

05/29/2014 2249 05/23/2014 1815 Analysis Batch: 280-227852 Prep Batch:

280-227266

Instrument ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume:

72 - 115

CHHPLC G 32.0 g 4 mL 20 uL PRIMARY

Prep Date: 05/23	/2014 1815		Resu	ilt Type:	PRIMARY
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.5	U	9.5	95
Acenaphthylene		8.6	U	8.6	95
Anthracene		2.9	U	2.9	19
Benzo(a)anthracene		13	J	3.0	14
Benzo[a]pyrene		13	J	6.1	14
Benzo[b]fluoranthene		4.0	U	4.0	14
Benzo[g,h,i]perylene		17	J	6.9	29
Benzo(k)fluoranthene		6.4	JX	3.8	14
Chrysene		15	JX	4.6	38
Dibenzo(a,h)anthracene		10	U	10	29
Fluoranthene		26	j	12	38
Fluorene		5.0	U	5.0	29
Indeno[1,2,3-cd]pyrene		12	J	11	29
Naphthalene		11	U	11	95
Phenanthrene		14	j	11	38
Pyrene		26	J	11	38
Surrogate		%Rec	Qualifier	Accep	otance Limits

83

Terphenyl-d14 (SUR)

Job Number: 280-55789-1 Client: Washington Closure Hanford

Sdg Number: JP0807

Client Sample ID:

J1TPX8

Lab Sample ID:

280-55789-7

Client Matrix:

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 1120

Date Received: 05/23/2014 0945

				-
831	O PA	VHs (HPL	٠٠١

Analysis Method:

8310

Analysis Batch:

280-227852

Instrument ID:

CHHPLC_G 31.0 g

Prep Method: Dilution: Analysis Date: 3550C 1.0

Prep Batch:

280-227266

Initial Weight/Volume: Final Weight/Volume:

4 mL 20 uL

05/29/2014 2319 05/23/2014 1815 Injection Volume: Result Type:

PRIMARY

Prep Date: 05/23/	/2014 1815		Resu	ilt Type:	PRIMARY
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	Ū	9.8	98
Acenaphthylene		8.8	U	8.8	98
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		7.4	J	6.3	15
Benzo[b]fluoranthene		5.8	JΧ	4.1	15
Benzo[g,h,i]perylene		7.1	U	7.1	29
Benzo[k]fluoranthene		. 3.9	U	3.9	15
Chrysene		9.6	JX	4.8	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		19	J	13	39
Fluorene		5.2	U	5.2	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		19	J	12	39
Surrogate		%Rec	Qualifier	Acce	ptance Limits
Terphenyl-d14 (SUR)	<u>Andrews and the property of the same of the body on the company of the same o</u>	84		72 -	115

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX9

Lab Sample ID:

280-55789-8

Client Matrix:

- "

Solid

% Moisture:

3.4

Date Sampled: 05/21/2014 0848

Date Received: 05/23/2014 0945

8240	PAHs	/HDI	^
93 IU	r Ans	INPL	

Analysis Method: Prep Method: 8310 3550C Analysis Batch:

12

12

12

280-227852

Instrument ID:

Result Type:

CHHPLC_G 30.0 g

Dilution:

355 1.0 Prep Batch:

280-227266

Initial Weight/Volume; Final Weight/Volume: Injection Volume:

MDL

10

9.3

3.2

3.3

6.6

4.3

7.5

4.1

5.0

11

13

5.5

12

12

12

12

4 mL 20 uL PRIMARY

RL

100

100

21

16

16

16

31

16

41

31

41

31

31

100

41

41

Analysis Date: Prep Date:

05/29/2014 2350 05/23/2014 1815

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier
Acenaphthene		10	U
Acenaphthylene		9.3	U

Α Anthracene 3.2 U Benzo[a]anthracene 3.3 U Benzo[a]pyrene 9.9 J Benzo[b]fluoranthene 4.3 U Benzo[g,h,i]perylene 7.5 U Benzo[k]fluoranthene 4.1 U Chrysene 7.0 .1 Dibenzo(a,h)anthracene 11 U Fluoranthene 13 U Fluorene 5.5 U Indeno[1,2,3-cd]pyrene 12 U

Surrogate
Terphenyl-d14 (SUR)

Naphthalene

Phenanthrene

Pyrene

%Rec Qualifier

Acceptance Limits 72 - 115

10/19/14

U

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U

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR01

Lab Sample ID:

280-55789-9

Client Matrix:

Solid

% Moisture:

1.7

Date Sampled: 05/21/2014 0818

Date Received: 05/23/2014 0945

8310	PAHe	(HPLC)	
0010	LWUS	IULF	ı

Analysis Method: Prep Method:

8310 3550C

1.0

Analysis Date: Prep Date:

Dilution:

05/30/2014 0020 05/23/2014 1815

Analysis Batch: 280-227852 Prep Batch:

280-227266

Instrument ID:

Result Type:

Initial Weight/Volume: Final Weight/Volume: Injection Volume:

CHHPLC_G 30.7 g 4 mL

20 uL PRIMARY

·			, 1000	in type.	EVINIAN
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	Ū	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo(b)fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	υ	11	30
Fluoranthene		13	U	13	40
luorene		5.2	U	5.2	30
ndeno[1,2,3-cd]pyrene		12	U	12	30
Vaphthalene		12	Ü	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40
Surrogate		%Rec	Qualifier	Accep	otance Limits
rerphenyl-d14 (SUR)		83	72 - 115		

M6/19/14

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR02

Lab Sample ID:

280-55789-10

Client Matrix:

05/30/2014 0051

05/23/2014 1815

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 0857

Date Received: 05/23/2014 0945

8310	PAHe	(HPLC)
400.00	1	1111

Analysis Method: Prep Method:

Analysis Date:

Prep Date:

Dilution:

8310 3550C 1.0

Analysis Batch: Prep Batch:

280-227852 280-227266 Instrument ID: Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 31.4 g 4 mL

Injection Volume: Result Type:

20 uL PRIMARY

	.20.4 10.0	0.0		in Type.	LIMMAKI
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		3.0	U	3.0	19
Benzo(a)anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo(k)fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
fluorene		5.1	U	5.1	29
ndeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39
Surrogate		%Rec	Qualifier	Acce	otance Limits
Terphenyl-d14 (SUR)		82		72 - 1	15

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Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR04

Lab Sample ID:

280-55789-11

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 0803

Date Received: 05/23/2014 0945

		_					
831	i n	p.	Δl	Je.	/H	DI.	CI

Analysis Method: Prep Method:

8310 3550C 1.0

Analysis Batch: Prep Batch:

280-227852 280-227266 Instrument ID: Initial Weight/Volume: Final Weight/Volume:

CHHPLC_G 30.8 g 4 mL 20 uL

Analysis Date: Preo Date:

Dilution:

05/30/2014 0122 05/23/2014 1815 Injection Volume: Result Type:

PRIMARY

Prep Date: 05/23	/2014 1815		Resi	iit rype:	PRIMART	
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL	
Acenaphthene		9.9	U	9.9	99	
Acenaphthylene		8.9	U	8.9	99	
Anthracene		3.0	U	3.0	20	
Benzo[a]anthracene		3.2	U	3.2	15	
Benzo[a]pyrene		6.3	U	6.3	15	
Benzo[b]fluoranthene		4.2	U	4.2	15	
Benzo[g,h,i]perylene		7.1	U	7.1	30	
Benzo[k]fluoranthene		3.9	U	3.9	15	
Chrysene		4.8	U	4.8	40	
Dibenzo(a,h)anthracene		11	U	11	30	
Fluoranthene		13	U	13	40	
Fluorene		5.2	U	5.2	30	
Indeno[1,2,3-cd]pyrene		12	U	12	30	
Naphthalene		12	U	12	99	
Phenanthrene		12	U	12	40	
Pyrene		12	U	12	40	
Surrogate	•	%Rec	Qualifier Accepta		otance Limits	
Terphenyl-d14 (SUR)	The control of the second seco	81	72 - 115			

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Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR07

Lab Sample ID:

280-55789-12

Client Matrix:

Solid

30-55/89-12

% Moisture:

1.3

Date Sampled: 05/21/2014 1058

Date Received: 05/23/2014 0945

9246	PAHs	/LIDI	~
8310	PANS.	Inrl	

Analysis Method:

8310

Client: Washington Closure Hanford

Analysis Batch:

280-227852

Instrument ID:

CHHPLC_G

Prep Method: Dilution: 3550C

Prep Batch:

280-227266

Initial Weight/Volume: Final Weight/Volume:

31.2 g 4 mL

Analysis Date:

1.0

05/30/2014 0152 05/23/2014 1815 Injection Volume: Result Type: 20 uL PRIMARY

Prep Date: 05/23	/2014 1815		Resu	It Type:	PRIMARY
Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.8	U	8.8	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	υ	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39
Surrogate		%Rec	Qualifier	Acce	ptance Limits
Terphenyl-d14 (SUR)	terren en e	83		72 -	115

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807 SAF#: RC-189

Date SDG Closed: May 23, 2014 Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED 6010/7471/8310/8082/WTPH-D+/WTPH-G	ANALYSES PERFORMED 6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV1	280-55789-1	6010/74/1/8310/8082/WTPH-D+/WTPH-G	
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	8010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	8010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	8010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO

No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs

The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Page 3 of 117

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Machinator Cla	cura Hanfa	ord CHA	AIN OF CUST	ODY/S	AMPL	E ANA	LYSI	SREQU	ESI	RG-18	89-302	DUS T	2/14
Washington Clo	Juie Haill	Compa	ny Contact n Kessner	Tele	ohone No. 4688			KESSNER,	ITOT	Price Code	-7	Data Ti	umaround
Project Designation Sampling Location							1	RC-189	*	+ Day			
100N Fleid Remediation			N-84:2, Verification, No		OA			Method of Ships	nent				
ce Chest No.			1652-12		01N8422	.000	1	Commercial	Carrier	FED E	×		
OCH-11-009, WC #-11-00	, Pac-ore) Com	Property No.					Bill of Lading/A	r Bill No.	See 0	S (O/		
TestAmerica Denver			A131	147		1				See U	JFC.	T	T
Other Labs Shipped To		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
i e			Type of Container	G/P	øG	#G	G	Gs*				-	
POSSIBLE SAMPLE HAZAR	DEIDENARKS		No. of Container(s)	1	1	1	1	3					
POSSIBLE SAMPLE HAZAN Potentially radioactive	DS/KEMAKKS		Volume	250ml.	250mL	250mL	125mL	60 Nont 1255/17/	74			1	
Special Handling and/or Sto മ മ മ	rage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Dies Range - WTPH-D	Range -					
	Matrix	Sample Date	e Sample Time	N STANSON	PARLEY.		N/STREET		New	自1月日1日			DISTRICT
<u>-</u>				×	*	*	×	×			1		
91TPV1	SOIL	5-21-1		×	×	×	K	×					
#ITPV2	SOIL	5-21-1	4 0744	1	-	+							
₩TPV3	SOIL	Jw.	5 10			-	-	_	1				
-JITPWI	SOIL	/د د	121/14				-	1 09	- I-1Y		+	1	1
JITPVE DWS YELLY	SOIL	5-21-14	6736	-×	_			7	1		_		
CHAIN OF POSS Reknquished By/Removed From Owney Shows Reknquished By/Removed From	Date/Time / 44	moske	Sign/Print Names ed in Deta/Time Deta/Time ad in 108 ad all Content Inc. A Backette	W 1442	(1) Cal Sei		010TR (CI	s ose-out List) (Ak Copper, Iron, Le dium, Vanadium				ryllium, Boron, num, Nickel, P	Cadmium, otassium,
1005 head wisted?	Date Try 081	S Proces	74	w 08									
Relinquished By Removed From DWSUGA DWSHEA	5/22/14 080	O Feel	red in Date/Tim	-								M S	
Relinquished By/Removed From Relinquished By/Removed From	Date/Time	Received By/Sto	573	H 94	5							DATE 5/22/14	7
Reinquished By/Removed From	Date/Time	Received By/Sto	red in Date/firm	ю.		JP	080	7			*		
FINAL SAMPLE Disposal Method		Disp	cosed By Dete	vTkne									

Washington Closure Ha	nford CH	AIN OF CUST	ODY/S	AMPL	EANA	LYSI	S REQU	EST	RC-1	89-302	Page 3	21/14	
Collector Q. Stow &	Compe								Price Code		Data Tu	Data Turnaround	
Project Designation		ng Location -N-84:2, Vertification, No	oth adviole-	. nait			RC-189					Flags	
100N Field Remediation ice Chest No.	COA			Method of Ship	ment								
WCH-11-009, WCH-11-001, VCC-07		ogbook No. 1652-12		01N8422	000		Commercia		Feel &	<u> </u>			
Shipped To	Offsite	Property No.		-			Bill of Lading/A	ir Bill Na.		. 00			
TestAmerica Denver		A13	31 147			ــــــــــــــــــــــــــــــــــــــ		- 2	ee of	7/	T		
Other Labs Shipped To		Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
		Type of Container	G/P	eG	#3	G	Ga*		-	<u> </u>	ļ		
POSSIBLE SAMPLE HAZARDS/REMARK	S	No. of Container(s)	1	1	1	1	3						
Potentially radioactive		Volume	250mL	250mL	250ml.	125mL	60 ms 5/19/1	<u>, </u>					
Special Handling and/or Storage ^{Pa} ള ഉ		Sample Analysis	See bem (1) in Special Instructions	PAHs - 8310	PCBs - 8062	TPH-Dies Range - WTPH-D	Range -						
e Sample No. Matrix	Sample Dat	a Sample Time		Contract to		3 1494	19 消集四世	MANUAL	D SHAN		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	明的验	
STPW1 SOIL	Jaws.												
MTPW2 SOIL	E 5/21/14	,											
Бітриз ѕон	1												
	5 34-1	4 0713	×					W55	Her	mus 5	12/14		
J1TPW4 SOIL	5-81-1		1			-	1 8	WS 57	22/14				
		Gi-m-l-t N-m-s	J	I SPEC	LAL INSTRI	LICTIONS			<u> </u>				
CHAIN OF POSSESSION Retinquished By/Removed From Date/Time /	Received By/Stor	Sign/Print Names	1442		00.11-1-1- 6	CARTE ICL	AN Heil this con	ıminum, An	timony, Arseni	c, Barium, Be	ryllium, Boron,	Cadmium,	
		DWSHEA 5/21	lau	1	rium Chroman	m Cohalt	Copper, Iron, Le dium, Vanadium	aad. Maone	sium, Mangani	ese, MONUO	num, Nickel, Po	otassium,	
Relinquished By/Removed From Date/Time	Received By/Stor	ad in code Date/Time		364	Strutt, Statest,	, 51142, 50	Oliviti' Amidenies	,	,				
DUSHEA S/21/14 17	63 Fridge	ad in cost of Date: Time 3/4 Baltalla 5/24/	14 (10	3		1.		NI	I.				
Refinquished By Removed From BA Date Time Refinquished By Removed F	Received By/Stor	a bushed 921/	14 084				11111	100	ı				
Defendabled Defendant Com	Received By/Stor	red to Date/Time		2_			My	(1, ,					
DWShanDWSHEA 72/14 05	820 Fed E	X					4	~	, λ	a de la companya de	Andrew Town	The same	
Ratinquished By/Ramoved From Date/Time	Received By/Sto	ed lo Date/Time					06	(×0.	100	1	EY	TO WE	
	Reserved By/Sto	S-Z3-	14 945				· A	2	3		8m5	j	
Retinquished By/Removed From Date/Time		-0	0-0-	1.	` ~ \	(V)	05	DATĘ					
Relinquished By/Removed From Dete/Time	Received By/Sto	red in Date/Time	•		JPC	780	ANY T	5	` <	V	5/22/14	4	
		coed By Date	(Time						0		· Constant		
	LIMP	Carry Life Dates											
FINAL SAMPLE Disposal Method DISPOSITION	100150-							- Aller Aller					

Washington C	losure Hanf	ord CHA	AIN OF CUST	ODY/S	EANA	S REQU	EST	RC-11	39-304	Page 1	Page 1 of 3			
Collector Q. Stow *	10041011211	Compar Joar	Company Contact Telephone No. Joan Kessner 375-4688							Price Code	*		Taloys	
Project Designation 100N Field Remediation			ig Location N-84:2, Venification, So	uth samoline	unit			SAF No. RC-189				rangs		
ice Chest No.			gbook No.		COA			Method of Shipn		1 0	_			
west -11-009, West-11	-001, RLC-07	C7 C2	652-12		01N8422	000		Commercial		I Feel 1	= X			
Shipped To TestAmerica Denver	•	Offsite	Property No. A 12	1147				Bill of Lading/Ai	r Billi 140.	Seec	SPC			
Other Labs Shipped To										T				
1			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 40	Cool 4C						
			Type of Container	G/P	e G	#G	G	Ge*				ļ		
POSSIBLE SAMPLE HAZ	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3						
Potentially radioactive			Volume	250mL	250mL	250ml.	125mL	60mL						
Special Handling and/or	Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PC8s -8082	TPH-Olise Range- WTPH-O	- Range -						
O	Matrix	Sample Date	Sample Time			AND MANUAL PROPERTY.			和线路		GENERAL		N. STAN	
b) TPX5	SOIL	5-21-1		PRODUCTION OF THE PROPERTY.	*	*	*	×						
MTPX6	SOIL	5-21-11		>=	×	×	×	*						
Ш трх7	SOIL	5-21-14		×	×	×	100	*						
J1TPX8	SOIL	5-21-19		7	>-	74	×	×						
J1TPX9	SOIL	5-21-14		×	×	*	×	×						
CHAIN OF PO		2-21-11	Sign/Print Names	<u> </u>	SPEC	CIAL INSTRI	JCTIONS	3						
Relinquished By/Removed From Relinquished By/Removed From	Date/Time 14 5-21-1 Date/Time 15/4/14 (70)	> Fridge	adin Data/Time awatteA 5/2/14 adin/Time Data/Time 3/A 5/21/14	1442	Cale Sele	rices Chromite	m Constit	ose-out List) (Alur Copper, Iron, Landium, Vanadium,	ad. Magon	BELLITI, MIZITORINI	ISB, MILIYUUGI	/Hum, Boron, (um, Nickel, Po	Cadmium, tassium,	
Reinquisted By/Removed From D Reinquisted By/Removed From WS Lea MUSH	bisterTime	Received By/Store	MUSHEA F22/19	1 0816							REVIEY	ED		
Relinquished By/Removed From	Data/Time	Received By/Store	C73	14.948						(-	δm5 DATE)		
Relinquished By/Removed From	Dete/Time	Received By/Stone	id in DeterTime	•						'	5/22	14		
Relinquished By/Removed From	Date/Time	Received By/Store		i.		JPO	807	,						
FINAL SAMPLE Disposal Me	ethod	Dispo	seed By Deter	(Time										
WCH-EE-011				10										

Washington Closure Hanford CHAIN OF CUSTODY/SAM							IPLE ANALYSIS REQUEST					Page 2	Page 2 or3	
Collector Company Contact Joan Kessner					phone No. -4688			Project Coordinato KESSNER, JH	Price Code Deta Thirmano					
Project Designation			ng Location	uth complin	n unit	9AF No. RC-189						tdo	45	
100N Field Remediation			N-84:2, Verification, So opbook No.		COA			Method of Shipmer	nt					
ice Chest No. WCH-11-009, WCH-	IL and December		652-12		01N842	2000				I Feel Ex				
Shipped To	II- ODI) ZOC 37	Offsite I	Property No. A					Bill of Lading/Air E	M No.	e 05	>-			
TestAmerica Denver			H13	1147			1	т т	20	400				
Other Labs Shipped To			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 46	Cool 4C						
			Type of Container	G/P	aG.	# G	G	Ge*						
POSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3						
Potentially radioactive			Volume	250mL	250mL	250mL	126ml	. GOmt.						
Special Handling and/o	r Storage		Sample Analysis	See item (1) in Special instructions	PAHs - 831	0 PC84 - 5082	TPH-Die Rarge WTPH-0	sel TPH-Gasolino - Ranga -) 4 WTPH-G						
B Sample No.	Matrix	Sample Date	Sample Time		COLUMN AS	STATE OF THE STATE OF	NI MI	MARKET BERN	林始	NAMES OF	開始發展	DELL'S	也的经济	
NTR00	SOIL	Bws	5/21/14				T							
MTR01	SOIL	5121114	0818	>	>	K	*	74				-		
HTR02	SOIL	SIAVI	4 0857	×	×	×	*	×				-		
J1TR03	SOIL		Dus 5/21/11	-										
J1TR04	SOIL	5-21-14		×	×	×	7						<u> </u>	
	OSSESSION as Par	Y	Sign/Print Names		SPE	CIAL INSTRI	UCTION	S						
Relinquished By/Removed From	Date Time 144	Received By/Store	NOSHEA # 5/21	114		whom Change	m Cahalt	lose-out List) (Akımlı Copper, Iron, Lead odium, Vanedium, Zi	MARKET	esiletti. Maettoiativa	NE. MICHYLLAGIN	Mickel, Po um, Nickel, Po	camrum,	
Define Johnst By/Permaned From	134/14 (Jel)	Received By/Store 3 Fridst 3	A Bathelle Yull	4 (70)	,									
Friday A TORO Hello Relinguished ByrRemoved From	122/14 DS1P	Replayed Byr Store	ed in Date/Time	081							REVIEW	uen.		
Reinquisted ByrRemoved From Dare/Time Received By/Six			Date/ftm								Sm15			
Refinquished By/Removed From Date/Time Redsided By/Stored			ed in Date/Time	4 940		-0-	C_{α}	,		1	5/22	THY		
Relinquished By/Removed From	Date/Time	Received By/Ston	ed in Date/Time	•		JPO	801							
FINAL SAMPLE Disposal N	dethod	Dispo	aséd By Date	/Time										
WCH-EE-011														

1 .

Washington (Closure Hanfo	rd CHA	AIN OF CUST	ropy/s	AMPL	E ANA	LYSI	S REQU	EST	RC-18	9-304	Page 3	of 3
Collector Q. 5 tow		Compa	Company Contact Telephone Joan Kessner 375-4688					Project Coordinator KESSNER, JH		Price Code			lays
Project Designation 100N Field Remediation			Sampling Location 100-N-84:2, Verification, South sampling unit					SAF No. RC-189				, ,	75
ce Chest No.	······································		gbook No.		COA			Method of Shipm		1- 1-	_		
ULH-11-009, WEH-1	1-001 RCL-07-01	! []	1652-12		01N8422	1000		Commercial Bill of Lading/Al		I Fed E	300002.2		
Shipped To TestAmerica Denver		Offsite	Property No. A131	147				Sai of Distribute	See	25 PC			17.55
Other Labs Shipped To			1		T		l '			1	1		
			Preservation	Cool 4C	Cool 40	Cool 4C	Cool 40	Cool 4C					
	*	5	Type of Container	G/P	•G	#G	G	Ge"					
POSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3			<u> </u>		
Potentially radioactive			Volume	250mL	250ml	250mL	125ml	. 60mL					
Special Handling and/o ല ല ല വ	r Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Dia Range WTPH-D	- Range -					
மு ம ப Sample No.	Matrix	Sample Date	Sample Time		TANK PE	- PERMIT NO			Name of	IN LEW BIO		THE REAL PROPERTY.	ng kali
5) TR05	90IL	7 DW 5 5/		Hall Million Division to make the									
M TROS	SOIL	F 100 3 77	21/14										
届TR07	SOIL	5-21-1	Y 1058	×	×	><	×	×					
M IKU/	SOIL	3-2(-1	7 700										
	(M)		Sign/Print Names		SPEC	CIAL INSTR	LICTION:	s		1	<u> </u>	l	
Relinquished By/Removed From	OSSESSION & SIZINA Detertine Page 144 Detertine	Preceived By/Stone	NUTSHAM 5/21	144	2 (1)	ICP Metals - 8	O1DTR (C	lose-out List) (Alur , Copper, Iron, Les odium, Vanadium,				ylium, Boron, ium, Nickel, Po	Cadmium, tassium,
Relinquished By/Removed From DWO Ken DWOHEA	3/- 1	Fridse 3	14 Butter (21)	14 170	3								
Fridge 3A Batt	de 922/14 0816	Mushea	NUSHEA STON	14 08	16						d		
Relinquished By/Removed From Relinquished By/Removed From	A Spring Octo	Received By/Story	X Date/Titr	79							RI 8	MS MS	
Relinquished By/Removed From	Date/Time	Redicitio By/Stor		<u>3494</u>	3							DATE 5/12/14	
Relinquished By/Removed From Data/Time Received By/Stored In Deta/Time				JP	086	7							
FINAL SAMPLE Dispose N	fethod	Dispo	osed By Dak	e/Time		٠ ب							
WCH-EE-011					1								

Appendix 5 Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c \)	D	Е		
PROJECT: L	00-10-8	u`Z	DATA PACKAGE: JPU807				
VALIDATOR: BLIZ LAB: A				DATE: 6	54		
			SDG:	P0407			
		ANALYSES	PERFORMED				
8015	8021	8141	8151	8315	(9319)		
		WTPH-HCID	WTPH-G	WTPH-D			
SAMPLES/MAT	RIX:						
JITPI		ins 11	TPXS	JHPAC			
MADX			TPX9	JITROI			
JITRO		204 J	1TR67				
37.70	<u> </u>	<u> </u>					
					3-11		
Technical verification		present?	CASE NARRATIV		Yes No N/A		
2. INSTRU	MENT TUNING	AND CALIBRATI	ON (Levels D and	E)			
			••••••				
Continuing calibra	ations acceptable?	,		.,	Yes No N/A		
Standards traceab	le?	•	***************************************	······································	Yes No N/A		
					Yes No N/A		
					Yes No N/A		
Comments:							

	BLANKS (Levels B, C, D, and E)				
	ration blanks analyzed? (Levels D, E)			No	N/A
Calibr	ration blank results acceptable? (Levels D, E)		Yes	No	N/A
Labor	atory blanks analyzed?		Yea	No	
Labora	atory blank results acceptable?		Yes	No	N/A
Field/t	trip blanks analyzed? (Levels C, D, E)		Yes (Ng	. 4
Field/1	trip blank results acceptable? (Levels C, D, E)		Yes	No (WA)
Transe	cription/calculation errors? (Levels D, E)		Yes	No (N/y
Comn	nents:	No PB			
					
4.	ACCURACY (Levels C, D, and E)		<i></i>		27/1
Surro	gates/system monitoring compounds analyzed?	······································	\sim	No	
Surro	gate/system monitoring compound recoveries acceptable?	?	Yes	No	AV.
	gates traceable? (Levels D, E)				<u>~</u>
Surro	gates expired? (Levels D, E)		Yes,	No!	N/I
MS/N	MSD samples analyzed?	(X CS	oVX	N/a
MS/N	MSD results acceptable?	(Yes	No	N/
MS/N	MSD standards NIST traceable? (Levels D, E)	······································	.Yes	No(X ¹
MS/N	MSD standards expired? (Levels D, E)		. ***	No	N/
	/BSS samples analyzed?			No	N/.
LCS/	/BSS results acceptable?		.Yes	No	1
Stand	dards traceable? (Levels D, E)		. Yes	No	(N/
	dards expired? (Levels D, E)				
Tran	scription/calculation errors? (Levels D, E)		. Yes	No	, W
Perfo	ormance audit sample(s) analyzed?		. Yes	(No.) MY
Perfo	ormance audit sample results acceptable?		Yes	No	W.
	ments:)		

5.	PRECISION (Levels C, D, and E)	
Duplicat	te RPD values acceptable?	(Yes) No N/A
Duplicat	te results acceptable?	
MS/MSI	D standards NIST traceable? (Levels D, E)	Yes No N/A
MS/MSI	D standards expired? (Levels D, E)	Yes No (VA)
Field dup	aplicate RPD values acceptable?	Yes No HA
Field spl	lit RPD values acceptable?	Yes No (N/)
Transcri	iption/calculation errors? (Levels D, E)	Yes No N/A
Commer	ents:	
		,
		<u></u>
6.	HOLDING TIMES (all levels)	
	s properly preserved?	
Sample	holding times acceptable?	Yes No N/A
Comme	ents:	

8. COMPOUN	D IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all	
levels)		
	requested analyses:	No N/A
	ne raw data? (Levels D, E)	
Samples properly pre	pared? (Levels D, E)	No (N/A)
Detection limits meet	KDD:	No N/A
Transcription/calcula	ion errors? (Levels D, E)	No NA
9. SAMPLE O	LEANUP (Levels D and E)	
Fluoricil ® (or other	aborbant) cleanup performed? Yes	No NA
Lot check performed	Yes	No N/A
Check recoveries ace	ptable?Yes	No N/A
	able?	
Check materials Exp	red?	Nd N/A
Analytical batch QC	given similar cleanup?Yes	No N/A
Transcription/Calcul	tion Errors?Yes	No N/A
Comments:		$- \bigvee$

Appendix 6

Additional Documentation Requested by Client

Quality Control Results

Job Number: 280-55789-1

Sdg Number: JP0807

Method Blank - Batch: 280-227266

Client: Washington Closure Hanford

Method: 8310 Preparation: 3550C

Lab Sample ID:
Client Matrix:
Dilution:
Analysis Date:

MB 280-227266/1-A Solid 1.0

Analysis Batch: Prep Batch: Leach Batch:

Units:

280-227852 280-227266 N/A ug/Kg

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: CHHPLC_G G0529008.D 30.0 g 4 mL 20 uL

Prep Date: Leach Date: 05/29/2014 1814 05/23/2014 1815

Column ID:

Injection Volume: PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	10	U	10	100
Acenaphthylene	9.0	U	9.0	100
Anthracene	3.1	U	3.1	20
Benzo[a]anthracene	3.2	U	3.2	15
Benzo(a)pyrene	6.4	U	6.4	15
Benzo[b]fluoranthene	4.2	U	4.2	15
Benzo[g,h,i]perylene	7.2	U	7.2	30
Benzo[k]fluoranthene	3.9	U	3.9	15
Chrysene	4.8	U	4.8	40
•	11	Ü	11	30
Dibenzo(a,h)anthracene Fluoranthene	13	Ū	13	40
	5.3	ŧIJ	5.3	30
Fluorene	12	Ü	12	30
Indeno[1,2,3-cd]pyrene	12	บ	12	100
Naphthalene	12	Ü	12	40
Phenanthrene		Ü	12	40
Pyrene	12	J	12	Ψ.
Surrogate	% Rec		Acceptance Limits	

Terphenyl-d14 (SUR)

83

72 - 115

TestAmerica Denver

Page 91 of 117

Quality Control Results

Job Number: 280-55789-1

Sdg Number: JP0807

Lab Control Sample - Batch: 280-227266

Client: Washington Closure Hanford

Method: 8310 Preparation: 3550C

Lab Sample ID: Client Matrix: Dilution:

Solid 1.0

LCS 280-227266/2-A 05/29/2014 1844

05/23/2014 1815

Analysis Batch: Prep Batch: Leach Batch:

Units:

1980

1980

1980

280-227852 280-227266 N/A ug/Kg

Instrument ID: Lab File ID:

Column ID:

91

91

93

Initial Weight/Volume: Final Weight/Volume: Injection Volume:

CHHPLC_G G0529009.D 30.3 g 4 mL 20 uL PRIMARY

Prep Date: Leach Date:

Analysis Date:

N/A

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1980	1770	89	78 - 116	N. C.
Acenaphthylene	1980	1690	85	⁻ 76 - 115	
Anthracene	1980	1650	83	74 - 115	
Benzofa]anthracene	1980	1920	97	85 - 120	
	1980	1720	87	74 - 121	
Benzo[a]pyrene	1980	1810	91	85 - 115	
Benzo[b]fluoranthene	1980	1940	98	85 - 120	
Benzo[g,h,i]perylene	1980	1880	95	85 - 115	
Benzo[k]fluoranthene	1980	1880	95	83 - 115	
Chrysene		1810	91	83 - 115	
Dibenzo(a,h)anthracene	1980		93	83 - 115	
Fluoranthene	1980	1830	92	80 - 115	
Fluorene	1980	1810		85 - 123	
Indeno[1,2,3-cd]pyrene	1980	1880	95 01	80 - 123	

1810

1800

1830

Surrogate Terphenyl-d14 (SUR)

Naphthalene

Pyrene

Phenanthrene

% Rec 83

Acceptance Limits 72 - 115

80 - 121

80 - 115

Job Number: 280-55789-1

Sdg Number: JP0807

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227266

Method: 8310 Preparation: 3550C

MS Lab Sample ID:
Client Matrix:
Dilution:
Analysis Date:
Prep Date:
Leach Date:

280-55789-2 Solid 1.0 05/29/2014 2016

05/23/2014 1815

05/29/2014 2047

Prep Batch: Leach Batch:

Analysis Batch:

280-227852 280-227266 N/A

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume: Column ID:

CHHPLC_G G0529012.D 30.6 g 4 mL 20 uL PRIMARY

MSD Lab Sample ID: Client Matrix:

Dilution:

Analysis Date:

280-55789-2 Solid 1.0

N/A

Client: Washington Closure Hanford

Analysis Batch: Prep Batch: Leach Batch:

280-227852 280-227266 N/A

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:

Injection Volume:

Column ID:

CHHPLC_G G0529013.D 30.4 g 4 mL 20 uL PRIMARY

05/23/2014 1815 Prep Date:

N/A Leach Date:

	<u>%</u>	Rec.					
Analyte	MS	MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	86	87	78 - 116	2	20		
Acenaphthylene	81	84	76 - 115	4	21		
Anthracene	90	89	74 - 115	1	20		
Benzo[a]anthracene	97	95	85 - 120	1	20		
Benzo[a]pyrene	95	91	74 - 121	2	20		
Benzo[b]fluoranthene	87	84	85 - 115	3	20		N
Benzo[g,h,i]perylene	103	102	85 - 120	0	20		
Benzo[k]fluoranthene	97	97	85 - 115	1	20		
Chrysene	97	95	83 - 115	1	20		
Dibenzo(a,h)anthracene	88	89	83 - 115	1	20		
Fluoranthene	91	94	83 - 115	3	20		
Fluorene	87	89	80 - 115	3	20		
Indeno[1,2,3-cd]pyrene	100	98	85 - 123	1	20		
Naphthalene	106	103	80 - 121	16	20		
Phenanthrene	93	91	80 - 115	1	20		
Pyrene	98	87	75 - 116	7	20		
Surrogate		MS % Rec	MSD %	6 Rec		ceptance Limi	s
Terphenyl-d14 (SUR)		90	119	*		72 - 115	

Quality Control Results

Job Number: 280-55789-1

Sdg Number: JP0807

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227266

Method: 8310 Preparation: 3550C

MS Lab Sample ID:

280-55789-2

Units: ug/Kg

MSD Lab Sample ID:

280-55789-2

Client Matrix:

Solid

Client: Washington Closure Hanford

Client Matrix:

Solid

Dilution:

1.0

Dilution:

1.0

Analysis Date:

05/29/2014 2016 05/23/2014 1815 Analysis Date:

05/29/2014 2047

Prep Date: Leach Date:

N/A

Prep Date:

05/23/2014 1815

Leach Date:

N/A

Analyte	Sample Result/Qu	ual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qu	ıal
Acenaphthene	120		1980	2000	1820	1850	
Acenaphthylene	8.6	U	1980	2000	1610	1680	
Anthracene	110		1980	2000	1900	1890	
Benzo[a]anthracene	620		1980	2000	2540	2520	
Benzo[a]pyrene	640		1980	2000	2520	2470	
Benzo[b]fluoranthene	480		1980	2000	2210	2150	N
Benzo[g,h,i]perylene	400		1980	2000	2440	2450	
Benzo[k]fluoranthene	220		1980	2000	2140	2160	
Chrysene	700		1980	2000	2610	2590	
Dibenzo(a,h)anthracene	85		1980	2000	1840	1860	
Fluoranthene	820		1980	2000	2620	2700	
	95		1980	2000	1820	1870	
Fluorene	400		1980	2000	2390	2360	
Indeno[1,2,3-cd]pyrene	12	U	1980	2000	2110	2060	
Naphthalene	210	0	1980	2000	2060	2030	
Phenanthrene Pyrene	1200		1980	2000	3110	2900	

Date:

20 June 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project:

100N Field Remediation - Soil Full Protocol - Waste Subsite 100-N-84:2

Subject:

Gasoline Range Organic - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	С	See note 1
J1TPV2	5/21/14	Soil	С	See note 1
J1TPX5	5/21/14	Soil	С	See note 1
J1TPX6	5/21/14	Soil	С	See note 1
J1TPX7	5/21/14	Soil	С	See note 1
J1TPX8	5/21/14	Soil	С	See note 1
J1TPX9	5/21/14	Soil	С	See note 1
J1TR01	5/21/14	Soil	С	See note 1
J1TR02	5/21/14	Soil	С	See note 1
J1TR04	5/21/14	Soil	С	See note 1
. J1TR07	5/21/14	Soil	С	See note 1

^{1 -} NWTPH-Gx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be analyzed within 14 days of the date of sample collection.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field (equipment) Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate recoveries were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1 Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The
 data may not be valid for some specific applications (i.e., usable for decisionmaking purposes).
- Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

GASOLINE RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project:	100-N-84:2	PAGE_1_OF_1					
COMMENTS: No qualifiers assigned									

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV1

Lab Sample ID:

280-55789-1

05/28/2014 0150

05/27/2014 1526

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 0749

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

Analysis Date:

NWTPH-Gx 5030B

1.0

Analysis Batch: Prep Batch:

280-227505 280-227475 Instrument ID:

VGC_Q Initial Weight/Volume:

Final Weight/Volume:

10.21 g

Injection Volume:

10 mL 5 mL

Result Type:

PRIMARY

Prep Date: Analyte

Dilution:

Result (ug/Kg)

Qualifier

MDL 330

RL

1200

Gasoline

DryWt Corrected: Y

330

U

Surrogate a,a,a-Trifluorotoluene %Rec 88

Qualifier

Acceptance Limits 77 - 123

Malalis

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV2

Lab Sample ID:

280-55789-2

Client Matrix:

Solid

% Moisture:

1.2

Date Sampled: 05/21/2014 0744

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Gx 1.0

5030B

Analysis Batch: Prep Batch:

280-227505 280-227475 Instrument ID:

Initial Weight/Volume:

VGC_Q

Final Weight/Volume:

10.22 g 10 mL

Injection Volume:

5 mL

Analysis Date: Prep Date:

05/28/2014 0304 05/27/2014 1526

Result Type:

PRIMARY

Analyte

Dilution:

Result (ug/Kg)

Qualifier Ū

MDL 320

RL 1200

Gasoline Surrogate DryWt Corrected: Y

320

Acceptance Limits

a,a,a-Trifluorotoluene

%Rec 90

Qualifier

77 - 123

Milalia

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX5

Lab Sample ID:

280-55789-4

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 1051

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Gx 5030B

Analysis Batch: Prep Batch:

280-227833 280-227475 instrument ID:

Final Weight/Volume:

Initial Weight/Volume:

VGC_Q 10.11 g 10 mL

Dilution: 1.0 Analysis Date: 05/29/2014 1243

Injection Volume: Result Type:

5 mL

Prep Date: Analyte

05/27/2014 1526

Result (ug/Kg)

Qualifier

MDL

PRIMARY RL

Gasoline

DryWt Corrected: Y

330

Ū

330

1200

Surrogate

%Rec

Qualifier

Acceptance Limits

a,a,a-Triffuorotoluene

77 - 123

Vilaly

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX6

Lab Sample ID:

280-55789-5

Client Matrix:

Solid

05/27/2014 1526

% Moisture:

1.1

Date Sampled: 05/21/2014 1058

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Gx 5030B

Analysis Batch: Prep Batch:

280-227505

Instrument ID:

VGC_Q

Prep Method: Dilution:

Initial Weight/Volume:

10.28 g

1.0

280-227475

Final Weight/Volume:

10 mL

Analysis Date: Prep Date:

05/28/2014 0418

Injection Volume: Result Type:

5 mL **PRIMARY**

Analyte Gasoline DryWt Corrected: Y

Result (ug/Kg)

Qualifier Ū

MDL 320

RL 1200

320

Qualifier

Acceptance Limits

Surrogate a,a,a-Trifluorotoluene %Rec 92

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX7

Lab Sample ID:

280-55789-6

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 1115

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Gx 5030B

Analysis Batch: Prep Batch:

280-227505

Instrument ID:

VGC_Q

Prep Method:

Dilution:

1.0

280-227475

Initial Weight/Volume: Final Weight/Volume: 10.05 g

Analysis Date:

Injection Volume:

10 mL 5 mL

Prep Date:

05/28/2014 0443 05/27/2014 1526

Result Type:

PRIMARY

Analyte

DryWt Corrected: Y

Result (ug/Kg) 330

Qualifier Ū

MDL 330

RL 1200

Gasoline Surrogate

%Rec

Qualifier

Acceptance Limits

a,a,a-Trifluorotoluene

93

77 - 123

Violaly

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX8

Lab Sample ID:

280-55789-7

Client Matrix:

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 1120

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Gx 5030B

Analysis Batch: Prep Batch:

280-227505

Instrument ID:

VGC_Q

Prep Method:

280-227475

Initial Weight/Volume:

10.02 g

Dilution: Analysis Date: 1.0

Final Weight/Volume:

05/28/2014 0508

Injection Volume:

10 mL 5 mL

Prep Date:

05/27/2014 1526

Result Type:

PRIMARY

Analyte Gasoline DryWt Corrected: Y

Result (ug/Kg) 330

Qualifier Ū

MDL 330

RL 1200

Surrogate

a,a,a-Trifluorotoluene

%Rec

Qualifier

Acceptance Limits

91

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX9

Lab Sample ID:

280-55789-8

05/28/2014 0533

05/27/2014 1526

Client Matrix:

Solid

% Moisture:

3.4

Date Sampled: 05/21/2014 0848

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

Analysis Date:

NWTPH-Gx 5030B

1.0

Analysis Batch: Prep Batch:

280-227505 280-227475

Instrument ID:

Initial Weight/Volume:

VGC_Q 10.35 g

Final Weight/Volume:

10 mL

Injection Volume:

5 mL

Result Type:

PRIMARY

Prep Date: Analyte

Dilution:

Result (ug/Kg)

Qualifier Ū

MDL 320

RL. 1200

Gasoline

DryWt Corrected: Y

320

Surrogate a,a,a-Trifluorotoluene %Rec 89

Qualifier

Acceptance Limits

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR01

Lab Sample ID:

280-55789-9

Client Matrix:

Solid

Date Sampled: 05/21/2014 0818

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Gx

Analysis Batch: Prep Batch:

280-227505

1.7

280-227475

Instrument ID:

Result Type:

Initial Weight/Volume:

VGC Q 10.24 g

Final Weight/Volume: Injection Volume:

10 mL 5 mL

Analysis Date:

Dilution:

5030B 1.0

05/28/2014 0557

Prep Date:

05/27/2014 1526

Result (ug/Kg)

Qualifier

MDL

PRIMARY

Analyte Gasoline DryWt Corrected: Y

320

% Moisture:

Ū

320

RL 1200

Surrogate

%Rec

Qualifier

Acceptance Limits

a,a,a-Trifluorotoluene

92

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR02

Lab Sample ID:

280-55789-10

Client Matrix:

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 0857

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Gx 5030B

1.0

Analysis Batch: Prep Batch:

280-227505 280-227475

Instrument ID:

Initial Weight/Volume:

VGC_Q 10.06 g 10 mL

Final Weight/Volume: Injection Volume: Result Type:

5 mL

Analysis Date: Prep Date:

Dilution:

05/28/2014 0622 05/27/2014 1526

Result (ug/Kg)

Qualifier

MDL

PRIMARY

Analyte Gasoline DryWt Corrected: Y

330

Ū

330

RL 1200

Surrogate

%Rec

Qualifier

Acceptance Limits

a,a,a-Trifluorotoluene

93

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR04

Lab Sample ID:

280-55789-11

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 0803

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Gx 5030B

Analysis Batch: Prep Batch:

280-227505 280-227475 Instrument ID:

Initial Weight/Volume:

VGC_Q 10.02 g

Dilution: 1.0 Analysis Date: 05/28/2014 0647

Prep Date:

05/27/2014 1526

Final Weight/Volume:

10 mL

Injection Volume:

5 mL

Result Type:

PRIMARY

Analyte

DryWt Corrected: Y

Result (ug/Kg)

Qualifier Ū

MDL 330

RL1200

Gasoline

330

Acceptance Limits

Surrogate a,a,a-Trifluorotoluene %Rec 92

Qualifier

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR07

Lab Sample ID:

280-55789-12

Client Matrix:

Solid

% Moisture:

1.3

Date Sampled: 05/21/2014 1058

Date Received: 05/23/2014 0945

NWTPH-Gx Northwest - Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Gx

5030B

1.0

Dilution: Analysis Date:

05/28/2014 0712 05/27/2014 1526 Analysis Batch: Prep Batch:

280-227505 280-227475 Instrument ID:

Initial Weight/Volume:

VGC_Q 10.38 g

Final Weight/Volume: Injection Volume:

10 mL 5 mL

Result Type:

PRIMARY

Analyte

Prep Date:

Result (ug/Kg)

Qualifier Ū

MDL

RL

Gasoline

DryWt Corrected: Y

320

320

1200

Surrogate a,a,a-Trifluorotoluene %Rec 90

Qualifier

Acceptance Limits

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807 SAF#: RC-189

Date SDG Closed: May 23, 2014
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1TPV1	280-55789-1	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/6082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-6	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO

No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs

The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Page 3 of 117

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, biased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, biased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be blased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data: therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington Cl	osure Hanfo	ord CHA	AIN OF CUST	TODY/S	SAMPI	LE ANA	LYS	S REQU	IEST	RC-1	89-302	Page 1	0182	
Collector Q. Strwe		Company Contact Telephone Joan Kessner 375-4688						Project Coordin KESSNER,		Price Code Data		Data Yi	Minaround	
Project Designation 100N Fleid Remediation	1 April - Contra	Sampling Location 100-N-84:2, Verification, North sampling unit					SAF No. RC-189		70		DA	1		
ice Chest No.	ld Logbook No. COA					Method of Shipment Commercial Carrier / FED EX								
Da: 11 00 / 107 11 001 , 1 = 0			1652-12	01N842	2000	Commercia	Ir Dill Ma	1 red E	×					
Shipped To TestAmerica Denver			Offishe Property No. A131147							Bill of Lading/Air Bill No. See OSPC				
Other Labe Shipped To			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 40	Cool 4C						
			Type of Container	G/P	øG	мG	G	Ga*						
POSSIBLE SAMPLE HAZARDS/REMARKS			No. of Container(s)	1 .	1	1	1	3						
Potentially radioactive			Volume	250mL	250ml.	250mL	125mL	100 Mint /12/	4					
Special Handling and/or St ຜູ້ ຊື່ ຄື	orage		Sample Analysis	See item (1) ir Special Instructions	PAHa - 8310	PC8s - 6082	TPH-Dias Range - WTPH-D	TPH-Gasoline Range - WIPH-G						
ம் ப Sample No.	Matrix	Sample Date	Sample Time	SERVICE SERVICE			Military.	Manage	MALIN	ER WILLSE	A BASIS	Middle	NAME OF THE PERSON NAME OF THE P	
SITPV1	SOIL	5-21-1	4 0749	×	×	*	×	×						
BMTPV2	SOIL	5-21-1		×	*	~	K	×						
J4TPV3	SOU	- 7 mus												
J1TPV4	SOIL	5 57	21/14											
JITPVS DWS YZZ/14	SOIL	5-21-14	0726	×	×	×		70%	1-19			1		
CHAIN OF POS	SESSION		Sign/Print Names		SPE	CIAL INSTRU	JCTIONS	1.5					•	
Relinquished By/Removed From Relinquished By/Removed From	Date/Time 1446		DOSHER 5/21/A	५ (५५2	Cai Sei	clum Chromius	m. Cobalt.	Copper, Iron, Le	ed. Magne	ntimohy, Arsenic, asium, Manganes arcury - 7471 - (C	e. Molybden	dium, Boron, C um, Nicke i, Po	Cadmium, tassium,	
Rollinguished By Romand From	hully 1703	Received By/Stone	A Barkelle Fize											
Friday 3 A 136 Hell Relinguished By Removed From	LETTYN USIG	Racelved ByrStore	SUSHEA 922/1	4 08	6					*	6			
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FINAL SAMPLE Disposal Method		Dispos	ed By Dete/1	Time		OI"								
WCH-EE-011		And the second s									- A - A - A - A - A - A - A - A - A - A			

Washington C	losure Han	ford CH	AIN OF CUST	TODY/S	SAMPI	LE ANA	LYS	IS REQU	JEST	RC-1	89-302	Page 4	21/14	
7 41. 4			Company Contact Telephone No. Joan Kessner 375-4888						ator JH	Price Code		Data Turnaround		
Project Designation 100N Field Remediation	ampling Location 100-N-84:2, Verification, North sampling unit					SAF No. RC-189					Follows			
ice Chest No.			Field Logbook No. COA						ment	1-0				
WCH-11-009, WCH-11-001, VCC-07-012 Shipped To TestAmerica Denver			1652-12 Property No.		01N8422000			Commercial Carrier / Feel Ex Bill of Lading/Air Bill No.						
Other Labs Shipped To		•	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 46	Cool 4C						
			Type of Container	G/P	#G	aG	G	Ga*				1		
POSSIBLE SAMPLE HAZARDS/REMARKS			No. of Container(s)	1	1	1	1	3						
Potentially radioactive			Volume	250mL	250mt.	250mL	126ml	60 255/14/1	<u>, </u>					
Special Handling and/or ସ ଅଧିକ୍ର ଅଧିକ୍ର ଜ	Storage		Sample Analysis	See Item (1) In Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Die Range WTPH-D	Range -						
o ⊢ Sample No.	Matrix	Sample Date	s Sample Time	HERE	U.S. Alle		BARRY.		design.	TERM!	ALCONO.		DEWEST.	
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WTPW2	SOIL	6/21/14	,											
Ы́тРW3	SOIL	 										T		
J1TPW4	SOIL	5-01-1	1 0713	×	-			17	W55/	Her	WS 5/	21/14		
		*						9	WS 5/2	2/14				
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FINAL SAMPLE Disposal Math	QQ	Dispo	eed By Deter	i ime										

Washington C	losure Hanf	ord CH	IAIN	OF CUST	ODY/S	AMPL	E ANA	LYSI	S REQU	EST	RC-18	39-304	Page 1	of3
Collector Q. Stow		Comp	peny Cor an Kess	ner		phone No. -4688			Project Coordinator KESSNER, JH		Price Code			urnaround
Project Designation 100N Field Remediation			Sampling Location 100-N-84:2, Verification, South sampling unit					1	SAF No. RC-189				fol	loys
ce Chest No.	<u> </u>		Logbook			COA			Method of Ships					
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TestAmerica Denver Other Labs Shipped To			_	HIS	1147						المحاد		1	1
Aner Labe Shipped 10	ž.	1	P	reservation	Cool 4C	Gool 4C	Cool 4C	Cool 4C	Cool 4C					
			Тур	e of Container	G/P	#G	aG .	G	Ge*					
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No.	of Container(s)	1	1	1	1	3					
Potentially radioactive				Volume	250mL	250mL	250mL	125mL	50mL					
Special Handling and/or t a a a a a a	Storage		Sar	mple Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Disas Range - WTPH-D	Range -					
Sample No.	Matrix	Sample Da	ite	Sample Time						NEW AND	STATISTICS.	CALLER .		
b) TPX6	SOIL	5-21-	14	1051	*	×	~	*	×					
HTPX6	\$OIL	5-21-1		1058	*	×	×	×	~					
Т ТРХ7	SOIL	5-21-1	4	1115	×	×	×	100	×					
J1TPX8	SOIL	5-21-1		1120	~	*	×	×	×					
J1TPX9	SOIL	5-21-19		0818	×	×	ж	<	× .					
CHAIN OF PO	SSESSION			n/Print Names		SPEC	IAL INSTRU	JCTIONS				•		
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Reinquished By/Removed From	Date/Time	Received By/Sto	ored in	Date/Time			IDO	807						

Company Contact Control of The Control of The Control C	Washington	Washington Closure Hanford		AIN OF CUST	FODY/S	SAMPL	E ANA	MPLE ANALYSIS REQUEST RC-189-304					Page 2	Page 2 of 3	
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Subject To TestAmenta Deriver Other Labs Bhipped To Preservetion One of Cool 40 Preservetion One of Cool 40 Preservetion Typo of Container OP 60 60 For 60 6		U Decen		■ 0 20000 2000 2			ennn				IE-1 E				
Preservetion Cost 4C	Shipped To	11-001, ECC 07		Dennarty No.	1147	01110-22	.000					****	· · · · · · · · · · · · · · · · · · ·		
POSSIBLE SAMPLE HAZARDS/REMARKS No. of Container(s) Volume 200s.L 250s.L 250s.L 150s.L 50s.L Special Handling and/or Storage Sample Analysis Sample Analysis Sample Analysis Sample No. Matrix Sample Datin Fire Sample No. Matrix Sample Datin SoliL 5121111 0 0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Other Labs Shipped To		·	·		Cool 4C	Cool 4C	Cool 40	Cool 4G						
Special Handling and/or Storage Sample Analysis Sample Analysis Sample Data Sam				Type of Container	G/P	#G	∎G	G	Ge*						
Special Handling and/or Storage Sample Analysis Sample No. Matrix Sample Date Sample Date Special Instructors Special Instructors Special Instructors Special Instructors Instruct	POSSIBLE SAMPLE HA	ZARDS/REMARKS		No. of Container(s)	,	1	1	1	3						
Sample No. Sample No. Matrix Sample Date Sample No. Matrix Sample No. Sampl				Volume	250mL	250mL	250mL	126mL	60mL						
Harrico Sample No. Matrix Sample Data Sample Time Harrico Soil	1	r Storage		Sample Analysis	Speciel	PAHs - 8310	PC8e - 8082	Range-	- Range -						
## TRO1 SOIL 5 11 14 0 8 8		Matrix	Sample Date	Sample Time	SOURCE OF THE PARTY OF THE PART		District to	NAMES I	MI RASINE	沒物時		THE DESCRIPTION OF THE PERSON	NEW WIL	d Smaller	
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CHAIN OF POSSESSION Refrequenced By/Removed From Destrine Received By/Stored in Destrine Rec	21TR03	SOIL		Bus 5/21/10											
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Resinquished By/Removed From Dete/Time Received By/Stored in Dete/Time FINAL SAMPLE Disposed Method Disposed By Dete/Time	DWShen MUSHEA!	1/21/14 (70)	2 KNIOSE SI	cuttale 74/1						*				<u>e</u>	
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WCH-EE-011	DISPOSITION	too(1	Dispos	ed By Date/	Time							***			

Washington	Closure Hant	ord Ch	IAI	NOF CUST	ODY/S	SAMPL	EANA	LYSIS	REQU	IEST	RC-	189-304	Page 3	3 0	
Collector Q. Stow		Com	an Ke	Contact		ephone No. 3-4688		P	roject Coordin KESSNER,	ator JH	Price Code		-	Data Turnarous	
Project Designation 100N Field Remediation	Sampl 100			ocation 4:2, Verification, So	ore level		*	3	AF No. RC-189				70	7day	
ice Chest No.	-001 RCC-07	OZ E	-1652			COA 01N8422	2000		lethod of Ship Commercia	I Carrier	I Fed	E .			
Shipped To TestAmerica Denver		Offsi	e Prop	Herty No. A 131	147	Un managed and		E	III of Lading/A	ir Bill No. See	92G	<u> </u>			
Other Labs Shipped To				Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
			T	ype of Container	G/P	•G	#G	G	Ge-					I	
POSSIBLE SAMPLE HA	ZARDS/REMARKS		N	o. of Container(s)	1	1	1 .	1	3					l	
Potentially radioactive	Potentially radioactive			Volume	250mL	250mL	250mL	126mL	60mL					1	
Special Handling and/o	r Storage		9	ample Analysis	See item (1) in Special Instructions	PAHs - 8310	PC8s - 8062	TPH-Diesel Range - WTPH-D +	TPH-Gasoline Range - WTPH-G					-	
Sample No.	Matrix	Sample Da	to	Sample Time	NAME OF		MALIA	問題為				A BENNE	THE R	4	
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	SOIL	_ر_	_						-				-	+	
其TR07	SOIL	5-21-	14	1058	*	<u>×</u>	*	×	×		+			t	
CHAIN OF P	OSSESSION PESTIL	14	5	Sign/Print Names		SPEC	IAL INSTRU	CTIONS						1	
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Appendix 5 Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	(c)	D	E
PROJECT: /C)U-N-84	, ζ	DATA PACKAG	E: JPU90	7
VALIDATOR:	ELR	LAB: TA	<u> </u>	DATE: 5/	15/14
			SDG: JP	0807	
		ANALYSES I	PERFORMED		
8015	8021	8141	8151	8315	
		WTPH-HCID (WTPH-G	WTPH-D	
· · · · · · · · · · · · · · · · · · ·					
SAMPLES/MAT	RIX:		<u> </u>	I	
JITPV	1 JITPI	17 11	TPXS J	1 PXG	
1/tPx			·	ITRUI	
1 TRO	· · · · · · · · · · · · · · · · · · ·		17/207	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
<u> </u>	9777	<u> </u>	75 700 7		
					5011
	ACKAGE COMPL tion documentation p				Yes No N/A
Initial calibrations	MENT TUNING A acceptable?			••••••	/ 1

3. BLANKS (Levels B, C, D, and E)	•	,	
Calibration blanks analyzed? (Levels D, E)	Yes	No (N/A
Calibration blank results acceptable? (Levels D, E)	Yes	No (N/A
Laboratory blanks analyzed?	(Yes)	No 1	N/A
Laboratory blank results acceptable?	Yes	No 1	N/A
Field/trip blanks analyzed? (Levels C, D, E)	Yesy	No)	N/A
Field/trip blank results acceptable? (Levels C, D, E)	Yes	No()	N/A
Transcription/calculation errors? (Levels D, E)	Yes	No	N/A
Comments:	NOFR		·
4. ACCURACY (Levels C, D, and E)		.	
Surrogates/system monitoring compounds analyzed?	Yes	No	N/A
Surrogate/system monitoring compound recoveries acceptable?			
Surrogates traceable? (Levels D, E)		/	イ つへ
Surrogates expired? (Levels D, E)			_
MS/MSD samples analyzed?			
MS/MSD results acceptable?	(. Ye)s	No	N/A
MS/MSD standards NIST traceable? (Levels D, E)	Yes	No	NH
MS/MSD standards expired? (Levels D, E)	Yes	No (N/A
LCS/BSS samples analyzed?	(yeş	No	N/A
LCS/BSS results acceptable?	(.Yes)	No	N/A
Standards traceable? (Levels D, E)	Yes	No	(NH
Standards expired? (Levels D, E)	Yes	Nd	Ŋ'n
Transcription/calculation errors? (Levels D, E)	Yes	No	WA
Performance audit sample(s) analyzed?	Yes	(No)	N/A
Performance audit sample results acceptable?	Yes	No	N/A
Comments:	no PAS		
	·		

5.	PRECISION (Levels C, D, and E)			
Dupli	cate RPD values acceptable?		No	N/A
	cate results acceptable?	V 1/	No	N/A
	MSD standards NIST traceable? (Levels D, E)	\ \ /	Nd	N/A
	ASD standards expired? (Levels D, E)		v	NA
Field	duplicate RPD values acceptable?		No) AMK
Field	split RPD values acceptable?	Yes	No	M
	cription/calculation errors? (Levels D, E)		•	•••
Comn	nents:			
				
6.	HOLDING TIMES (all levels)		\	
Samp	les properly preserved?	Yes	No	N/A
Samp	ele holding times acceptable?	Yes	No	N/A
Comr	ments:			
		,		<u>.</u>

8. COMPOUND IDENTIFICATION, QUANTITATION, AND L	DETECTION LIMITS (all
levels)	
Results reported for all requested analyses?	(Yes)No N/A
Results supported in the raw data? (Levels D, E)	Yes No (N/A)
Samples properly prepared? (Levels D, E)	Yes No (N/A)
Detection limits meet RDL?	Yes No NA
Transcription/calculation errors? (Levels D, E)	Yes No N/
Comments:	
· · · · · · · · · · · · · · · · · · ·	
9. SAMPLE CLEANUP (Levels D and E)	
Fluoricil ® (or other aborbant) cleanup performed?	/ 1
Lot check performed?	Ýes N/A
Check recoveries aceptable?	Yes No N/A
Check materials traceable?	Yes No N/A
Check materials Expired?	Yes No N/A
Analytical batch QC given similar cleanup?	Yes No N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	

Appendix 6

Additional Documentation Requested by Client

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Method Blank - Batch: 280-227475

Method: NWTPH-Gx Preparation: 5030B

Lab	Sampl	e ID:
-----	-------	-------

MB 280-227475/1-A

Analysis Batch:

280-227505

Instrument ID:

Column ID:

VGC Q

Client Matrix: Dilution:

Solid 1.0

Prep Batch: Leach Batch:

Units:

280-227475 N/A

Lab File ID: Initial Weight/Volume: 012F2901.D 10 g

Analysis Date: Prep Date:

05/28/2014 0036 05/27/2014 1526 ug/Kg

Final Weight/Volume:

10 mL

Injection Volume:

5 mL

Leach Date:

N/A

Qual

PRIMARY

Gasoline

Analyte

Result 330

Units:

Ū

MDL 330

RL 1200

Surrogate

% Rec

Acceptance Limits

a,a,a-Triffuorotoluene

84

77 - 123

Lab Control Sample/

Method: NWTPH-Gx Preparation: 5030B

Initial Weight/Volume:

Final Weight/Volume:

Injection Volume:

Instrument ID:

Lab File ID:

Column ID:

LCS Lab Sample ID: Client Matrix:

Analysis Date:

Prep Date:

Leach Date:

Client Matrix:

Leach Date:

a,a,a-Trifluorotoluene

Analyte

Dilution:

Dilution:

Solid

LCS 280-227475/2-A

1.0

Lab Control Sample Duplicate Recovery Report - Batch: 280-227475

05/28/2014 0101 05/27/2014 1526

N/A

Solid 1.0

05/28/2014 0125 Analysis Date: Prep Date: 05/27/2014 1526

N/A

LCSD Lab Sample ID: LCSD 280-227475/3-A

Analysis Batch: 280-227505 Prep Batch: 280-227475 Leach Batch:

N/A ug/Kg

280-227505

280-227475 N/A ug/Kg

Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume:

Injection Volume: Column ID:

10 g 10 mL 5 mL **PRIMARY**

VGC_Q

10 g

10 mL

PRIMARY

VGC_Q

014F3101.D

5 mL

013F3001.D

% Rec. LCSD

86

Analysis Batch:

Prep Batch:

Units:

LCS

Leach Batch:

Gasoline 102 103 Surrogate LCS % Rec

Limit 85 - 153

87

0 LCSD % Rec

RPD

RPD Limit 30

LCS Qual

LCSD Qual

Acceptance Limits 77 - 123

TestAmerica Denver

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Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Laboratory Control/

Laboratory Duplicate Data Report - Batch: 280-227475

Method: NWTPH-Gx Preparation: 5030B

LCS Lab Sample ID:

LCS 280-227475/2-A

Units: ug/Kg

LCSD Lab Sample ID: LCSD 280-227475/3-A

Client Matrix:

Solid 1.0

Client Matrix: Dilution:

Solid 1.0

Dilution: Analysis Date:

05/28/2014 0101

Analysis Date:

05/28/2014 0125

Prep Date:

05/27/2014 1526

Prep Date:

05/27/2014 1526

Leach Date:

N/A

Leach Date:

N/A

Analyte	LCS Spike	LCSD Spike	LCS	LCSD
	Amount	Amount	Result/Qual	Result/Qual
Gasoline	5500	5500	5630	5650

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227475

Method: NWTPH-Gx Preparation: 5030B

MS Lab Sample ID: Client Matrix: Dilution:

Analysis Date:

Prep Date:

Leach Date:

Client Matrix:

Analysis Date:

Prep Date:

Leach Date:

Gasoline

Dilution:

280-55789-1 Solid

05/28/2014 0215

05/27/2014 1526

Analysis Batch: Prep Batch: Leach Batch:

280-227505 280-227475 N/A

Instrument ID: Lab File ID:

VGC Q 016F3301.D Initial Weight/Volume: 10.24 g

Final Weight/Volume: 10 mL 5 mL PRIMARY

MSD Lab Sample ID:

280-55789-1

Solid

N/A

1.0

N/A

05/28/2014 0239 05/27/2014 1526 Analysis Batch: Prep Batch: Leach Batch: N/A

280-227505 280-227475 Instrument ID: Lab File ID:

Column ID:

Injection Volume:

Initial Weight/Volume: Final Weight/Volume:

30

017F3401.D 10.04 g 10 mL 5 mL

VGC_Q

Column ID:

Injection Volume:

PRIMARY

% Rec.

Analyte

MS MSD 108 102

Limit 85 - 153 RPD

RPD Limit

MS Qual MSD Qual

Surrogate a,a,a-Trifluorotoluene MS % Rec 92

MSD % Rec 93

77 - 123

Acceptance Limits

TestAmerica Denver

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Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227475

Method: NWTPH-Gx Preparation: 5030B

MS Lab Sample ID:

280-55789-1

280-55789-1

Client Matrix:

Solid

MSD Lab Sample ID: Client Matrix:

Solid

Dilution:

1.0

Dilution:

1.0

Analysis Date: Prep Date:

05/28/2014 0215 05/27/2014 1526 Analysis Date:

05/28/2014 0239

Leach Date:

NΑ

Prep Date:

05/27/2014 1526

Leach Date:

N/A

Acceptance of the control of the con	Sample		MS Spike	MSD Spike	MS	MSD
Analyte	Result/Qua		Amount	Amount	Result/Qual	Result/Qual
Gasoline	330	U	5520	5630	5940	5770

Units: ug/Kg

Date:

20 June 2014

To:

Washington Closure Hanford Inc. (technical representative)

From:

ELR Consulting

Project: 1

100N Field Remediation - Soil Full Protocol - Waste Subsite 100-N-84:2

Subject:

Diesel Range Organics - Data Package No. JP0807-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0807 prepared by TestAmerica Laboratories (TAL). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J1TPV1	5/21/14	Soil	C	See note 1
J1TPV2	5/21/14	Soil	С	See note 1
J1TPX5	5/21/14	Soil	С	See note 1
J1TPX6	5/21/14	Soil	С	See note 1
J1TPX7	5/21/14	Soil	С	See note 1
J1TPX8	5/21/14	Soil	С	See note 1
J1TPX9	5/21/14	Soil	С	See note 1
J1TR01	5/21/14	Soil	С	See note 1
J1TR02	5/21/14	Soil	C	See note 1
J1TR04	5/21/14	Soil	С	See note 1
J1TR07	5/21/14	Soil	С	See note 1

^{1 -} Diesel range organics by NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites (DOE/RL-2005-92, Rev. 0, October 2006). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers

Appendix 2. Summary of Data Qualification

Appendix 3. Annotated Laboratory Reports

Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation

Appendix 5. Data Validation Supporting Documentation

Appendix 6. Additional Data Requested by Client

DATA QUALITY OBJECTIVES

Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as

follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results

are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

All accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

Precision

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1TPX6/J1TR07) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

Completeness

Data package No. JP0807 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2005-92, Rev. 0, 100-N Area Sampling and Analysis Plan for CERCLA Waste Sites, U.S. Department of Energy, October 2006.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

- Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.
- UJ Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.
- R Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.
- UR Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.
- NJ Indicates presumptive evidence of a compound at an estimated value. The
 data may not be valid for some specific applications (i.e., usable for decisionmaking purposes).
- N Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2
Summary of Data Qualification

DIESEL RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP0807	REVIEWER: ELR	Project: 100-N-84:2	PAGE_1_OF_1						
COMMENTS: No qualifiers assigned									

^{* -} The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV1

Lab Sample ID:

280-55789-1

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 0749 Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch: Prep Batch:

280-227627

Instrument iD:

SGC_U

Prep Method:

3550C

280-227256 Lab File ID:

05280008.D

Dilution:

Initial Welght/Volume:

Analysis Date:

31.1 g

Prep Date:

05/28/2014 1619 05/23/2014 1935 Final Weight/Volume: Injection Volume:

1 mL 1 uL

Analyte C10-C36 DryWt Corrected: Y

Result (ug/Kg) 3700

MDL Qualifier 990 670

RL 4000 4000

C10-C28 Surrogate 2600 %Rec

Qualifier

Acceptance Limits

o-Terphenyl

77

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPV2

Lab Sample ID:

280-55789-2

Client Matrix:

Solid

% Moisture:

1.2

Date Sampled: 05/21/2014 0744

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Method:

Prep Batch:

280-227256 Lab File ID:

05280011.D

Dilution:

1.0

30.0 g

Analysis Date:

Initial Weight/Volume: Final Weight/Volume:

690

05/28/2014 1746

1 mL

Prep Date:

05/23/2014 1935

Injection Volume:

1 uL

Analyte C10-C36 DryWt Corrected: Y

Result (ug/Kg) 58000

Qualifier MDL 1000 RL 4000 4000

C10-C28 Surrogate

o-Terphenyl

34000

Qualifier

Acceptance Limits

%Rec

82

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX5

Lab Sample ID:

280-55789-4

Client Matrix:

Solid

% Moisture:

2.8

Date Sampled: 05/21/2014 1051

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Method: Dilution:

Prep Batch: 280-227256

Lab File ID:

05280012.D

Analysis Date:

1.0

Initial Weight/Volume:

30.1 g

Final Weight/Volume:

1 mL

Prep Date:

05/28/2014 1815 05/23/2014 1935

Injection Volume:

MDL

1000

700

1 uL

Analyte C10-C36 DryWt Corrected: Y

Result (ug/Kg) 31000

Qualifier

RL 4100 4100

C10-C28

26000

Qualifier

Acceptance Limits

Surrogate o-Terphenyl %Rec 73

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX6

Lab Sample ID:

280-55789-5

Client Matrix:

Solid

% Moisture:

1.1

Date Sampled: 05/21/2014 1058

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Method:

Prep Batch:

Lab File ID:

Dilution: Analysis Date: 1.0

280-227256

05280013.D

05/28/2014 1844

Initial Weight/Volume: Final Weight/Volume:

30.1 g

05/23/2014 1935

Injection Volume:

1 mL

Prep Date:

1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 7600 6000

Qualifier

MDL 1000 680

RL4000 4000

Surrogate o-Terphenyl

%Rec

Qualifier

Acceptance Limits

49 - 115

79

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX7

Lab Sample ID:

280-55789-6

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 1115

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Method:

3550C

Prep Batch:

280-227256

Lab File ID:

Dilution:

1.0

05280014.D

Analysis Date:

Initial Weight/Volume:

30.5 g

Prep Date:

05/28/2014 1913

Final Weight/Volume: Injection Volume:

1 mL 1 uL

Analyte

05/23/2014 1935

Result (ug/Kg)

Qualifier

MDL 1000

680

RL 4000

4000

C10-C36 C10-C28 DryWt Corrected: Y

11000 7300

Qualifier

Acceptance Limits

49 - 115

Surrogate o-Terphenyl

%Rec 83

V 6/19/19

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX8

Lab Sample ID:

280-55789-7

Client Matrix:

Solid

% Moisture:

1.5

Date Sampled: 05/21/2014 1120 Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Batch:

Lab File ID:

05280016.D

Dilution:

1.0

280-227256

Initial Weight/Volume:

Analysis Date:

Final Weight/Volume:

32.6 g 1 mL

Prep Date:

05/28/2014 2011 05/23/2014 1935

Injection Volume:

1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Result (ug/Kg) 4200 3100

Qualifier MDL 930 630

RL 3700 3700

Surrogate o-Terphenyl

%Rec 74

Qualifier

J

Acceptance Limits

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TPX9

Lab Sample ID:

280-55789-8

Client Matrix:

Solid

% Moisture: 3.4 Date Sampled: 05/21/2014 0848

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

instrument ID:

SGC_U

Prep Method:

1.0

Prep Batch:

280-227256

Lab File ID:

Dilution:

05280017.D

05/28/2014 2040 Analysis Date:

Initial Weight/Volume: Final Weight/Volume:

30.6 g 1 mL

Prep Date: 05/23/2014 1935 Injection Volume:

1 uL

Analyte C10-C36 DryWt Corrected: Y

Result (ug/Kg) 19000

Qualifier

MDL 1000 690

4100 4100

C10-C28

6500

Qualifier

Acceptance Limits

Surrogate o-Terphenyl %Rec 75

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR01

Lab Sample ID:

280-55789-9

05/23/2014 1935

Client Matrix:

Solid

% Moisture:

1.7

Date Sampled: 05/21/2014 0818

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx

3550C

Analysis Batch: Prep Batch:

280-227627

Instrument ID:

SGC_U

Dilution: Analysis Date: 1.0

280-227256

Lab File ID: Initial Weight/Volume: 05280018.D

05/28/2014 2108

Final Weight/Volume:

MDL

30.7 g

1 mL

Injection Volume:

1 uL

Analyte	DryWt Corrected: Y
C10-C36	
C10-C28	

Result (ug/Kg) 3400 2600

Qualifier 990 670 RL 4000 4000

Surrogate o-Terphenyl

Prep Date:

%Rec 78

Qualifier

Acceptance Limits

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR02

Lab Sample ID:

280-55789-10

Client Matrix:

Solid

% Moisture: 1.5 Date Sampled: 05/21/2014 0857 Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method: Prep Method:

NWTPH-Dx 3550C

Analysis Batch: Prep Batch:

280-227627

Instrument ID:

SGC_U

Dilution:

1.0

280-227256

Lab File ID:

05280019.D

Initial Weight/Volume:

MDL

980

660

Final Weight/Volume:

31.1 g 1 mL

Analysis Date: Prep Date:

05/28/2014 2137

Injection Volume:

1 uL

Analyte C10-C36 05/23/2014 1935 DryWt Corrected: Y

Result (ug/Kg) 5900

Qualifier

RL 3900 3900

C10-C28 Surrogate

o-Terphenyl

4400

%Rec

79

Qualifier

Acceptance Limits

49 - 115

TestAmerica Denver

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR04

Lab Sample ID:

280-55789-11

Client Matrix:

Solid

% Moisture:

1.6

Date Sampled: 05/21/2014 0803

Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Method:

Prep Batch:

280-227256 Lab File ID:

Dilution:

05280020.D

Initial Weight/Volume:

MDL

32.2 g

Analysis Date:

Final Weight/Volume:

1 mL

Prep Date:

05/28/2014 2205 05/23/2014 1935

Injection Volume:

1 uL

RL

Analyte C10-C36 C10-C28 DryWt Corrected: Y 3900

Result (ug/Kg) Qualifier j

940 3800 640

3800

Surrogate o-Terphenyl %Rec 77

2600

Qualifier

Acceptance Limits

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Client Sample ID:

J1TR07

Lab Sample ID:

280-55789-12

Client Matrix:

Solid

% Moisture:

1.3

Date Sampled: 05/21/2014 1058 Date Received: 05/23/2014 0945

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:

NWTPH-Dx 3550C

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Prep Method: Dilution:

1.0

280-227256 Prep Batch:

Lab File ID:

05280021.D

Analysis Date:

Initial Weight/Volume:

30.0 g

Prep Date:

05/28/2014 2233 05/23/2014 1935 Final Weight/Volume: Injection Volume:

MDL

1 mL 1 uL

Analyte C10-C36 C10-C28 DryWt Corrected: Y

Resuit (ug/Kg) 4400 3100

1000 690

RL 4100 4100

Surrogate o-Terphenyl

%Rec 78

Qualifier

Qualifier

J

Acceptance Limits

49 - 115

1/19/4

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-55789-1

SDG #: JP0807 SAF#: RC-189

Date SDG Closed: May 23, 2014 Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID 280-55789-1	ANALYSES REQUESTED 6010/7471/8310/8082/WTPH-D+/WTPH-G	ANALYSES PERFORMED 6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPV2	280-55789-2	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPW4	280-55789-3	6010/7471	6010B/7471A
J1TPX5	280-55789-4	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX6	280-55789-5	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX7	280-55789-8	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX8	280-55789-7	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TPX9	280-55789-8	6010/7471/8310/8082/WTPH-D+WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR01	280-55789-9	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR02	280-55789-10	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR04	280-55789-11	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx
J1TR07	280-55789-12	6010/7471/8310/8082/WTPH-D+/WTPH-G	6010B/7471A/8310/8082/NWTPH-Dx/NWTPH-Gx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 5/23/2014 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 4.4° C, 4.7° C and 4.9° C.

GC VOLATILES - NWTPH-Gx - GRO

No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs

The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Samples J1TPV2 and J1TPX9 contained a combination of Aroctor 1254 and Aroctor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroctor.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, sample J1TPV2 had to be analyzed at a dilution, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilution required.

Page 3 of 117

Surrogate recoveries obtained for sample J1TPV2 are calculated from a diluted sample and are not considered reliable.

The MS/MSD performed on sample J1TPX5 exceeded the RPD limit for Aroclor 1016. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered

GC SEMIVOLATILES - NWTPH-Dx - DRO

No anomalies were encountered.

HPLC - SW846 8310 - PAHs

In some cases, the RPD between the primary and confirmation columns exceeded 40%. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1TPV2 exhibited a percent recovery outside the control limits, blased low, for Benzo[b]fluoranthene, and the associated sample result has been flagged "N". In addition, surrogate Terphenyl-d14 was recovered outside the control limits, blased high, in the MSD aliquot of the MS/MSD. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A

Serial dilution of a digestate in batch 280-227290 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. Samples J1TR01 and J1TR07 required a 5X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Silicon and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium are present in the method blank associated with batch 280-227290. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-227290. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

Cadmium was recovered outside the control limits, biased high, in the LCS associated with batch 280-227290, and the associated sample results have been flagged "N". This is an indicator that data may be biased high. As Cadmium is not present at a level greater than the reporting limit in the associated samples, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1TPV1; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1TPV1 exhibited percent recoveries outside the control limits for several elements, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1TPV1 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

Washington C	losure Hanfor	d CHA	AIN OF CUST	ODY/S	AMPL	E ANA				RC-18	9-302	Page 1	1/2
			Company Contact Telephone No. Joan Kessner 375-4688					Project Coordinator KESSNER, JH		Price Code		Data Turnaround	
Project Designation 100N Field Remediation			Sampling Location 100-N-84:2, Verification, North sampling unit			SAF No. RC-189					子	DA.	1
Ce Chest No. Field Logboo SCH-11-009, LNC H-11-001, [2CC-07-017_ EL-1652- Shipped To Offsite Proper			gbook No.	book No. COA				Method of Shipment					
				UIN042	2000	Commercial Carrier / FED EX BILL of Lading/Air Bill No. See OSPC							
Other Labs Shipped To			Preservation	Cool 4C	Cool 4C	Cool 4C	Çool 40	Gool 4C					
			Type of Container	G/P	#G	∎G	G	Ge*					
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1	3					
Potentially radioactive			Volume	250mL	250mt.	250mL	125mL	Pass /12	γ				
Special Handling and/or:	Storage		Sample Analysis	See čem (1) in Special Instructions	PAHs - 8310	PC8s - 8092	TPH-Dist Range - WTPH-0	Range -					
Sample No.	Matrix	Sample Date	Sample Time	WASHINGTON AND THE		MANAGE			通权的		A DESCRIPTION OF THE PERSON OF	的建筑的	化的山油层
91TPV1	SOIL	5-21-1	Y 0749	×	K.	*	*	×	The state of the s				
BITPV2	SOIL	5-21-1		~	*	~	K	×					
TITPV2	SOIL	7 ms											
JITPV4	SOIL	_5 57	21/14										
TITPUS DUS YESTY	SOIL	-21-14	0776	×	×	×	×-	700	# 1-14				
CHAIN OF PO Reinquished By/Removed From Owney Store Reinquished By/Removed From Now 5 hear DWSHEA	Detertine 1442 5-21-14 5/2/14 1763	Fride 3	Doster 5/21/10 din 10 6 9/21/2 Demotions A Bartelle F/21/2	4 445	- (1) Calc Sel	CIAL INSTRU ICP Metals - 60 clum, Chromius snium, Silicon,	110TR /CL	sea out Lieft /Aki	minum, Ar ed, Magne Zinc}; Me	ntimony, Arsenic, asium, Manganes acury - 7471 - (Ci	Barlum, Bery e, Molybdenu V)	tlium, Boron, C Im, Mickel, Pol	Cadmium, .
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Washington C	losure Hanf	ord CH	AIN OF CUST	ODY/S	AMP	LE ANA	LYS	IS REQU	IEST	RC-	189-302	Page 4	21/14
Collector Q. Stowe		Compa	n Kessner		phone No. 4688			Project Coordin KESSNER,		Price Code			urnaround
Project Designation 100N Field Remediation	·		ng Location N-84:2, Verification, No.	oth execution	tions			8AF No. RC-189					Flags
ice Chest No.			ogbook No.		COA			Method of Ships	ment				
WCH-11-009 , WCH-11-	001. RCC-07-	100000000000000000000000000000000000000	1652-12		01N842	2000		Commercia	i Carrier	/ Feel	EX		
Shipped To TestAmerica Denver			Property No.	31 147				Bill of Lading/A	ur BM No.	See O	sec		
Other Labs Shipped To			1	71 171		7	Τ		-	TE C.		T .	<u> </u>
			Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4	C Coal 4C					
		and the second s	Type of Container	GP	øG	a/G	G	Gs*					
POSSIBLE SAMPLE HAZ	ARDS/REMARKS		No. of Container(s)	1	1	1	1	3					
Potentially radioactive			Volume	250mL	250ml.	250mL	125m	60 straft	/				
Special Handling and/or S ଅନ୍ତର୍ଜ ଜୁନ	Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 831	0 PCBs - 8082	TPH-Dis Range WTPH-I	- Range -					
Bample No.	Matrix	Sample Date	Sample Time	周期根据		entire.					基 與 於 	超过起	
STPW1	SOR -	Sws.											
#ATPW2		E 5/21/14											
Б ТРW3	SOIL					,							
J1TPW4	SOL	5-81-14	1 0713	×			-	——-	WES	trytar	BWS 5/	21/14	
								p	WS 5/	22/14			
CHAIN OF PO	SSESSION	I	Sign/Print Names			CIAL INSTRI							
Relinquished By/Removed From	Date/Time 144	2 Received By/Store		, 111	(1)	ICP Metals - 6	010TR (C	lose-out List) (Alu , Copper, Iron, Le	minum, An	timony, Arseni sium, Mangan	c, Barium, Bery ese, Molybdeni	dikum, Boron, (um, Nickel, Po	Cadmium, tassium,
Relinquished By/Removed From	5-21-14 Date/Tree	Becaused Busilion	DWSHEA Stry	114	Se	tenium, Silicon,	Silver, Sc	dium, Vanadium,	Zinc); Mer	icury - 7471 - (CV)		
Mushe Dusted 57	21/14 170	3 Fridge 3	3p Baltolle Fry	14 170	3				111	. 2			
Relinquished By/Removed From	A Date/Time	liceceived physicis	idin Daterjime			*		111	101				
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DWShenDWSHEA	72/14 082				- 1			01. 10	~) . X	J.E		A.
Relinquished By/Removed From	Date/Time	Received By/Store	Date/Time				•	04	1×0.	100	1	EV.	DAR.
	Date/Time	Reactived By/Store	S-73-)	4945	_			di	2	3	1	8m3	Ì
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Relinquished By/Removed From	Date/Time	Received By/Store	ed in Date/Time			THO	00.	S MIN'M	5	. <	V	5/22/14	
FINAL SAMPLE Disposal Methods DISPOSITION	od	Dispo	ued By Dete/	lime						0			
WCH-EE-011													

Washington (Closure Hanfo	rd CHA	AIN OF CUST	ODY/S	SAMPL	E ANA	LYSI	S REQU	EST	RC-11	39-304	Page 1	Page 1 of 3	
Collector Q. Stow •			ny Contact n Kessner		ephone No. 5-4688			Project Coordin KESSNER.		Price Code			umaround	
Project Designation 100N Field Remediation		Samplin	g Location N-84:2, Verification, Sc					SAF No. RC-189		×		7d	bys	
ice Chest No.			Md Logbook No. COA				Method of Shipment							
West 11-009, West-1	1-001, RCC-07-		652-12 Property No.					Commercial Carrier Feel Ex						
TestAmerica Denver		Olisans i	A 13	51 147				DIE OF COUNTY	11 MIII 140	See	spc			
Other Labs Shipped To		*	Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 40	Cool 4C						
			Type of Container	G/P	#G	æG	G	Ge*						
POSSIBLE SAMPLE HA	ZARDS/REMARKS	A	No. of Container(s)	1	1	1	1	3						
Potentially radioactive			Volume	250mL	250mL	250mL	125mL	60mL						
Special Handling and/or യ യ യ വ	Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PCBs - 8082	TPH-Oins Range - WIPH-D	Range -						
Sample No.	Matrix	Sample Date	Sample Time	1282100		MARIE STATE		S ROLLS			COLUMN TO		E OSINTOS	
b)TPX5	SOIL	5-21-1	1051	×	×	~	*	×	Market St.	STATE OF THE PARTY	- Contraction	Name of the Party	and expends and other	
TPX6	SOIL	5-21-11		*	×	×	×	~						
Т ТРХ7	SOIL	5-21-14		×	×	×	1=	×						
J1TPX8	SOIL	5-21-14		×	*	74	×	×						
J1TPX9	SOIL	5-21-14	0848	×	~	K	×	×						
CHAIN OF PO			Sign/Print Names		SPEC	IAL INSTRU	JCTIONS				•	-		
Refinquished By/Removed From Refinquished By/Removed From BWS Le Bruss Head Refinquished By/Rempyed From D	5-21-14 Deserting 5/4/14 (709)	Received Byritore	SHEA Strolly Indian December 3.4 Strolly In December December	1442	Calc	ium, Chromius	m. Cobalt.	se-out List) (Alur Copper, Iron, Let Illum, Vanadium,	id, Magne	salum, Manganes	ie, Molybdani	/illum, Boron, (um, Nickel, Po	ladinium, laesbum,	
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Relinquished By/Removed From	CA 12/14 0820	Received ByrStores	Un Dete/Time	JU QUE	_						Sm S			
Refinquished By/Removed From	Dute/Time	Received By/Stone	5-CS In Date/Time	14.948						7	5/22/	14		
Relinquished By/Removed From	Date/Time	Received By/Stored		•		JPO	807			•				
FINAL SAMPLE Disposed Mon	frod	Disposi	ed By Dede∕i	lime		VI 0	307							
WCH-EE-011	•							* .						

Washington C	losure Han		AIN OF CUST			E ANA	-			RC-18	9-304	Page 2	
Collector Q. 510me			Company Contact Telephone No. Joan Kessner 375-4688				Project Coordina KESSNER, J	IH	Price Code		4	umaround	
Project Designation			Sampling Location 9. 100-N-84:2, Verification, South sampling unit				SAF No.				72	ays	
100N Field Remediation ce Chest No.			ogbook No.		g unit COA	<u> </u>		RC-189 Method of Shipment					
wcH-11-009, wcH-1	1-001, RCC-07	1				N8422000		Commercial Carrier					
Shipped To	7	Offsite	Property No. A.12	1147			1	Bill of Lading/Air	BIH No.	e08	>-		
TestAmerica Denver Other Labs Shipped To			1112	177	1	ı	- 	Т	20	103		1	
· · · · · · · · · · · · · · · · · · ·			Preservation	Cool 4C	Cool 46	Cool 4C	Cool 4C	Cool 4C					
			Type of Container	GIP	#G	#G	G	Ge*					
POSSIBLE SAMPLE HAZ	ARDS/REMARKS	*	No. of Container(s)	1	1	1	1	3					
Potentially radioactive			Volume	250ml.	250mL	250mL	126mL	60mL					
Special Handling and/or to page 1991	Storage		Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	PC8s - 8082	TPH-Dies Rangs - WTPH-D	Range -					
는 Sample No.	Matrix	Sample Dat			HIRIS	HEADIN		1000000	为规则	有 有	HARRY	加姆地	
HTR00		Mus	5/21/14									-	-
JATRO1	SOIL	512111	1 0818	>	>	K	*	*					-
HTR02	SOIL	5/21/1	H 0857	×	×	×	*	×					-
JITR03	SOIL		1003 5/21/14									_	-
J1TR04	SOIL	5-21-11	0803	×	×	×	×	٠ - حر				<u> </u>	
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Washington (Closure Hanfo	rd CH	AIN OF CUST	TODY/S	SAMPL	EANA	LYS	IS REQU	EST	RC-1	89-304	Page 3	of3
Collector		Compa Joa	ny Contact n Kessner		ephone No. 5-4688	·		Project Coordin KESSNER,		Price Code			lays
Project Designation 100N Field Remediation	×.		ng Location -N-84:2, Verification, S	outh samplin	ıg unit			SAF No. RC-189				F	rays
ice Chest No.	· · · · · · · · · · · · · · · · · · ·	Field L	ogbook No.	•	COA			Method of Ships	ment		_		
WH-11-009, WEH-1	1-001 RCL-07-0		1652-12		01N842	1N8422000				/ Fed Ex			
Shipped To TestAmerica Denver	•	Offsite	Property No. A131	147				DIR OF LIGHTS/A	عمد	2380			
Other Labs Shipped To		· · · · · · · · · · · · · · · · · · ·	Preservation	Cool 4C	Cixol 4C	Cool 4C	Coul 40						
			Type of Container	Q/P	∌G	#G	g	Ge*					
POSSIBLE SAMPLE HAZ	ZARDS/REMARKS		No. of Container(s)	1	1	1	1	3					
Potentially radioactive			Valume	250mL	250mil.	250mi.	126ml	L 60ml					
Special Handling and/or	Storage		Sample Analysis	See item (1) in Special Instructions	PAHa - 8310	PCBs - 8062	TPH-0te Range WTPH-0	TPH-Gasoine - Range- VIPH-G			100		
A Sample No.	Matrix	Sample Date	Sample Time				MERCHANICAL PROPERTY.		網網		AND AND	HEEK	
51TR05	SOIL	7 200 5 5/	21.										
BITRO6	SOIL	3	entry .										
й тко7	SOIL	5-21-1	Y 1058	*	×	><	×	×			-		
			-	+	 			-	_		 	 	
Relinquished By/Removed From	Desertine 144	Received By/Store	Sign/Print Names ad in Deby/Time	144	L (1)	clum, Chromiu	010TR (Ci m, Cobalt,	ose-out List) (Alu Copper, Iron, Le	ad, Magn	esium, Mangane:	se, Molyddeni	llium, Boron, C ım, Nickel, Po	Cadmium, tassium,
Ratinquished By Ramoved From a	12/14 1703	Received By/Store	MUSHER S/EI/I dhisto A Bulkelle S/21/1	,	Set	enium, Silicon,	Silver, So	dium, Vanadium,	Zinc); Me	ercusy - 7471 - (C	v)		
Restroyed By Removed From Middle 3A Be Hel	6 972/14 0816	Received Bytom	WSHEA 5/20	14 08	6								
Relinquished By/Removed From Relinquished By/Removed From	A spring octo	Received By/Store	d in Date/Time								RE	VIEWED	1
rominguasing byromioved Flori	Campisue	Tay /		5-H 948	5						81	. 7	_
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FINAL SAMPLE DISPOSITION	thod	Dispo	sed By Date/	Terre		۱۳							
WCH-EE-011													

Appendix 5

Data Validation Supporting Documentation

VALIDATION LEVEL:	A	В	C	D	E
PROJECT:	100-2-8	4:2	DATA PACKAG	E: JP0807	
VALIDATOR:	ELR	LAB: TAC		DATE: (0	15/14
			SDG:	JP0807	
		ANALYSES	PERFORMED		
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G (WTPH-D	
SAMPLES/MAT	RIX:				
JITPVI	UITPI	12 317	TPXS J	17PXC	
JITPX7			ITPX9		
JITRUZ	A	_	15RU7		
					Soil
	tion documentation				Yes(No)V/A
	MENT TUNING A		•		
	acceptable?				/ 1
U	•				Yes No N/A
	e? ?				Yes No N/A
=	acceptable?				1
	acceptable;				

BLANKS (Levels B, C, D, and E)			
Calibration blanks analyzed? (Levels D, E)			
Calibration blank results acceptable? (Levels	D, E)		Yes No N/A
Laboratory blanks analyzed?		***************************************	Yes No N/A
Laboratory blank results acceptable?			Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E)		•••••	Yes NO N/A
Field/trip blank results acceptable? (Levels C			
Transcription/calculation errors? (Levels D, I	E)		Yes No NA
Comments:		no PA	5
4. ACCURACY (Levels C, D, and E			
Surrogates/system monitoring compounds an			
Surrogate/system monitoring compound reco			
Surrogates traceable? (Levels D, E)			
Surrogates expired? (Levels D, E)			
MS/MSD samples analyzed?			¥ / Y \
MS/MSD results acceptable?			
MS/MSD standards NIST traceable? (Levels	D, E)		Yes No N/A
MS/MSD standards expired? (Levels D, E)			Yes No N/A
LCS/BSS samples analyzed?			
LCS/BSS results acceptable?			Yes No N/A
Standards traceable? (Levels D, E)			Yes No N/A
Standards expired? (Levels D, E)			Yes No N/A
Transcription/calculation errors? (Levels D,	E)		Yes No WA
Performance audit sample(s) analyzed?			Yes No N/A
Performance audit sample results acceptable	?		Yes No NyA
Comments:			
		1000	1/2

5.	PRECISION (Levels C, D, and E)	
Dupl	licate RPD values acceptable?	
Dupl	licate results acceptable?	
MS/N	MSD standards NIST traceable? (Levels D, E)	Yes No()±
MS/N	MSD standards expired? (Levels D, E)	Yes No N
Field	duplicate RPD values acceptable?	
	d split RPD values acceptable?	
Tran	scription/calculation errors? (Levels D, E)	Yes No (N/)
Com	iments:	
6.	HOLDING TIMES (all levels)	
Samp	ples properly preserved?	
Samj	ple holding times acceptable?	(Yes/ No N/2
Com	nments:	

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECT	ION LIMITS (all
levels)	
Results reported for all requested analyses?	(Yes No N/A
Results supported in the raw data? (Levels D, E)	Yes No N/A
Samples properly prepared? (Levels D, E)	Yes No NA
Detection limits meet RDL?	(Yes) No N/A
Transcription/calculation errors? (Levels D, E)	Yes No (N/A
Comments:	
9. SAMPLE CLEANUP (Levels D and E)	
Fluoricil ® (or other aborbant) cleanup performed?	Yes No N/A
Lot check performed?	¥
Check recoveries aceptable?	1
Check materials traceable?	Yes No N/A
Check materials Expired?	Yes No N/A
Analytical batch QC given similar cleanup?	Yes Nd N/A
Transcription/Calculation Errors?	Yes No N/A
Comments:	

Appendix 6

Additional Documentation Requested by Client

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Method Blank - Batch: 280-227256

Method: NWTPH-Dx Preparation: 3550C

Lab	Sample	ID:
-----	--------	-----

MB 280-227256/1-A

Analysis Batch:

280-227627

Instrument ID:

SGC_U

Client Matrix: Dilution:

Solid

Prep Batch: Leach Batch: 280-227256 N/A

Lab File ID: Initial Weight/Volume: 05280005.D 30.6 g

Analysis Date:

1.0 05/28/2014 1452

Units:

ug/Kg

Final Weight/Volume: Injection Volume:

1 mL

Prep Date:

05/23/2014 1935

Leach Date:

N/A

1 uL

Analyte	Result	Qual	MDL	RL
C10-C36	980	U	980	3900
C10-C28	660	U	660	3900
	A1 50	A		
Surrogate	% Rec	Accep	otance Limits	
o-Terphenyi	80	4	19 - 115	

Lab Control Sample/

Lab Control Sample Duplicate Recovery Report - Batch: 280-227256

Method: NWTPH-Dx Preparation: 3550C

LCS Lab Sample ID Client Matrix: Dilution: Analysis Date: Prep Date:	Solid 1.0 05/28/2014 1521 05/23/2014 1935	Analysis Batch: Prep Batch: Leach Batch: Units:	280-227627 280-227256 N/A ug/Kg	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume:	SGC_U 05280006.D 30.1 g 1 mL 1 uL
Leach Date:	N/A				
LCSD Lab Sample I Client Matrix: Dilution: Analysis Date: Prep Date: Leach Date:	D: LCSD 280-227256/3-A Solid 1.0 05/28/2014 1550 05/23/2014 1935 N/A	Analysis Batch: Prep Batch: Leach Batch: Units:	280-227627 280-227256 N/A ug/Kg	Instrument ID: Lab File ID: Initial Weight/Volume: Final Weight/Volume: Injection Volume:	SGC_U 05280007.D 31.2 g 1 mL 1 uL
		% Rec			

	<u>%</u>	Rec.					
Analyte	LCS	LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	92	90	57 - 115	6	23		
C10-C28	92	90	53 - 115	6	23		
Surrogate	LC	S % Rec	LCSD %	Rec	Acceptance Limits		
o-Terphenyl	75		67		4	9 - 115	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Laboratory Control/

Laboratory Duplicate Data Report - Batch: 280-227258

Method: NWTPH-Dx Preparation: 3550C

LCS Lab Sample ID:

LCS 280-227256/2-A

Units: ug/Kg

LCSD Lab Sample ID: LCSD 280-227256/3-A

Client Matrix:

Solid

Client Matrix: Dilution:

Solid 1.0

Dilution: Analysis Date: 1.0

Analysis Date:

05/28/2014 1550

Prep Date:

05/28/2014 1521 05/23/2014 1935

Prep Date:

05/23/2014 1935

Leach Date:

N/A

Leach Date:

N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	66500	64200	61500	57800
C10-C28	66500	64200	61200	57700

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227256

Method: NWTPH-Dx Preparation: 3550C

Final Weight/Volume:

Injection Volume:

Injection Volume:

MS Lab Sample ID: Client Matrix:

280-55789-1 Solid

Analysis Batch: Prep Batch:

280-227627 280-227256 Instrument ID:

SGC_U

Dilution: Analysis Date:

N/A Leach Batch:

Lab File ID: Initial Weight/Volume: 05280009.D 30.6 g 1 mL

Prep Date: Leach Date: 05/28/2014 1648 05/23/2014 1935

N/A

Instrument ID:

1 uL

Client Matrix:

MSD Lab Sample ID:

Solid 1.0

N/A

280-227627 Analysis Batch: 280-227256 Prep Batch:

Lab File ID:

SGC_U 05280010.D

MSD Qual

Dilution: Analysis Date:

05/28/2014 1717 05/23/2014 1935

280-55789-1

Leach Batch:

Initial Weight/Volume: Final Weight/Volume: 30.4 g 1 mL 1 uL

49 - 115

Prep Date: Leach Date:

Analyte C10-C36 C10-C28

Surrogate

o-Terphenyl

% Rec.

64

MS	MSD	Limit	RPD	RPD Limit	MS Qual
86	88	57 - 115	3	23	
86	89	56 - 115	4	23	
	MS % Rec	MSD 9	6 Rec	Acceptance	

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TestAmerica Denver

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Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-55789-1

Sdg Number: JP0807

Matrix Spike/

Matrix Spike Duplicate Recovery Report - Batch: 280-227256

Method: NWTPH-Dx Preparation: 3550C

MS Lab Sample ID:

280-55789-1

Units: ug/Kg

MSD Lab Sample ID:

280-55789-1

Client Matrix:

Solid 1.0 Client Matrix:

Solid

Dilution: Analysis Date:

05/28/2014 1648

Dilution:

1.0

Prep Date:

05/23/2014 1935

Analysis Date: Prep Date: 05/28/2014 1717 05/23/2014 1935

Leach Date:

N/A

Leach Date:

N/A

Analyte	Sample Result/Qua	ı	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	3700	J	67300	67700	61400	63200
C10-C28	2600	J	67300	67700	60400	62600